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THE

PHOTOGRAPHIC NEWS:

A WEEKLY RECORD

OF THE

PROGRESS OF PHOTOGRAPHY.

VOLUME XIV.

EDITED BY G. WHARTON SIMPSON, M.A., F.S.A.

Nulla recordanti lux est ingrata.—MARTIAL.

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PREFACE.

The record of a year's experience and progress, found in the completed year's issue of a weekly scientific journal, scarcely needs the customary after-words which usually stand as preface to the volume. The statements of facts, expressions of opinion, and intimations of suggestion are all issued beyond recall: the Editor can but say, "What is writ, is writ; would it were worthier!" But it is not with any view to explanation, modification, or apology, that the occasion is annually taken by the Editor of saying a few personal words to his readers. It is pleasant to refer, from time to time, to pleasant relations so long and so pleasantly maintained; and, in issuing the Fourteenth Volume of the Photographic News, amid the fluctuations which have prevailed in photography and photographic periodical literature—during which essays in journalism have waxed, waned, and ceased to be—it is satisfactory to know that this Journal has steadily grown in public favour, in influence, and in the number and staunchness of its friends, gaining in stability as it has grown in years.

We refer to these facts in no spirit of self-laudation, but in grateful recognition of favours as involving duties. We feel how deep is the responsibility laid upon us by so much kindly public appreciation, and how imperative it is that we should be worthy of the trust. We have before avowed our conviction of the vital influence exercised by photographic journalism on the progress of photography, both as science, art, and commerce. The advance made in the course of a few brief years, unprecedented in the history of any art or science, would have been impossible without the ready means of communication for the interchange of suggestion and experience, for the record of experiment, the announcement of discovery, and the dissemination of instruction, which photographic journalism has furnished. The work of the pioneer is, to a great extent, completed; but the function of the journal, and the duties of the journalist in connection with the art, are not abrogated, nor, indeed, much modified. The periodical literature of the art must help to popularize and make facile that which it at first helped to make possible; and it must aid in elevating and making excellent that which it has helped to make popular. This shall still be our aim. Whatever bears upon the varied interest of photography and photographers shall still be the study of our life: whatever of scientific investigation or experimental research, whatever of art culture, whatever of economic development, can affect the progress of the art and the welfare of the artist, shall receive in our pages the fullest record and exposition. The mere chronicle of the varied events which constitute the history of an art is worth preserving ; but where such chronicle can be often made the means of initiating improvement and giving impetus to progress, it is a work of vital importance. To aid us in prosecuting this work we gladly gain all available aid. Our staff of regular and occasional contributors already includes some of the most able and distinguished exponents of the artistic, scientific, experimental, and practical branches of the art ; and we invite the aid of all who, by statement or suggestion, may be able to add to the interest and value of our pages. To the wide circle of correspondents whose experiences, hints, and expressions of opinion have aided us in the past, we here tender our thanks, and express our hope that we shall still continue to receive these aids to progress in our pages. Personally, we can but renew past pledges. Wherein we have had the good fortune to win approbation in the past, we shall not, we think, be disqualified by garnered experience for continuing in well-doing ; and we scarcely need add that we shall still less be disqualified by any lack of earnest resolve and good-will in relation to our duties. Without multiplying word-pledges, we simply say that we shall endeavour to be worthy of the trust we have so bountifully received during the issue of the eleven volumes of the PHOTOGRAPHIC NEWS, issued under our personal charge. With thanks to our staff, contributors, correspondents, and readers—which list includes the mass of the photographic community throughout the world—we wish for all a happy and prosperous New Year.

JANUARY 2, 1871.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
Photography During the Past Year ... 1
Photo-mechanical Printing ... 2
Chemical "Halation" in Eclipse Photographs ... 3
One Print from Two Negatives ... 3
Photography in America ... 4
Foreign Miscellanea ... 5
Forthcoming French Photographic Exhibition ... 6
How to Clean Plates. By B. J. Edwards ... 6
Transferring Films. By David Duncan ... 7
Lighting the Sitter, or Producing Effects in Portraiture on ly. By Robert Gillo ... 7
Landscape Photography. By William Brooks ... 8
Correspondence — Enlargements by the Magic Lantern—Bleached Lac in Varnishes—Hot Water Pipes in Studios—Rowsell's Graphoscope—Dr. Monckhoven's Reply to Mr. Thomas Barrett ... 9
Proceedings of Societies—Amateur Photographic Association ... 10
Talk in the Studio ... 11
To Correspondents ... 11

PHOTOGRAPHY DURING THE PAST YEAR.

A RETROSPECTIVE glance over a year's history is always interesting and instructive, and it is pleasant to add, in relation to the twelve months just completed, the examination affords several sources of satisfaction. In many respects the photographic year has been marked by distinct progress. During the three decades which have elapsed since its discovery as a practical art, it has seen many phases of change and advancement. But of late the keen thirst for novelty, the eager interest in experiment, of a sometimes vague, and not unfrequently empirical, character, has largely past away. But whilst new processes are less numerous, the tendency of experiment, it is satisfactory to note, is to secure practical ends. In the actual discoveries of the year there is real gain, and the domain of photography has been both enriched and extended.

Of primary importance is the advancement made in permanent printing. The old and just reproach of photography, the unstable character of its productions, has lost its force. Apart from the improvements made in methods of silver printing, whereby increased permanency is secured, various methods now exist of obtaining photographic impressions, lacking no point of excellence, and of absolutely unchallengeable stability. Chief amongst the improvements of the year in this direction is the improved carbon process of Mr. Johnson. A few years ago Mr. Swan made perfect carbon printing in half tone commercially practicable; this year Mr. Johnson has made it easy and cheap, without sacrificing any jot of beauty or excellence; and, we may add, still greater improvements in the process will shortly be announced in our columns. Mr. Window has announced the discovery of another method of producing carbon photographs, which for special purposes possesses great promise, and is, we understand, unusually simple, and easy in practice. The publication of Mr. Blair's pamphlet must have given fresh stimulus to many carbon experimentalists, although, as yet, we have heard but little of their labours. The method of producing carbon pictures without transfer, by means of a tissue rendered temporarily transparent at the back, first suggested by Mr. Swan some years ago, has appeared twice during the year as an independent discovery: it has been published by Mr. Blair, and included in a specification by Mr. Pouncy. The examples of work done in this way with which we have been favoured by Mr. Blair have suggested that for amateur purposes this plan possesses many advantages.

Photo-mechanical printing processes have made great progress during the year. The results of Herr Albert, of Munich, by a method analogous to photo-lithography, in which a layer of bichromated gelatine exposed under a negative acquires the property of repelling water, and receiving a coating of fatty ink, in the exact ratio of the action of light, far surpasses in excellence anything hitherto produced by analogous modes of printing. The process, so far as we can learn, is essentially practical, and the plates yield a large number of impressions. The success of Herr Albert has stimulated many other experimentalists in a similar direction, many of them with considerable promise, but none at present nearly approaching in excellence to the most successful of the Alberttypes. In photo-block printing Mr. Dallas has continued to make progress, and has produced some very good results in line and stipple. Photo-block printing of subjects direct from nature does not appear to make progress, nor at present to afford much hope of success. A new process of photo-mechanical printing, by Messrs. Edwards and Kidd, the details of which have not yet appeared, seems to possess considerable promise. Mr. Woodbury's method of photo-relief printing has made some progress, and maintains its distinctive excellence, amongst photo-mechanical processes, of producing the most perfect analogue of the sun-picture proper, which has ever been obtained by mechanical means.

Ceramic photography has excited considerable attention during the year, and various experimentalists have been engaged upon it. Mr. Henderson has attained the highest excellence in this country, many of his enamel miniatures being absolutely perfect in delicacy, force, gradation, and tone. His method, however, remains a secret.

Silver printing processes have made some progress, less in relation to results than to means. Permanent sensitive albuminized papers of real excellence have taken a place in commerce, and offer many advantages, especially to amateurs. Collodio-chloride printing has made some progress: the method of fuming the film has been found a valuable improvement. Camera-printing on wet collodion has been successfully practised during the year.

The ordinary wet collodion negative process has not undergone much change during the year. Some attention has been given to the use of alkaline or neutral nitrate baths, as a means of attaining increased sensitiveness, and negatives which do not require intensifying. Mr. Blanchard has secured some very encouraging results in this direction. The use of washed wet plates has continued to be successfully practised. The golden syrup solution, for preserving plates moist exposed and developed in the field, with a view to finishing at home, has also come into more general use.

In dry plate processes there has been but little change. The gum-gallic process of Mr. Gordon has become the general favourite, and has yielded, in the hands of many photographers, very fine negatives. Mr. England has used it extensively during the summer, and brought home from Switzerland some hundreds of very fine negatives by it. There is strong general testimony to the excellent keeping qualities of the plates; but Mr. England expresses a decided conviction that these, in common with every kind of dry plate, deteriorate from the time of their preparation. The gum-gallic plates exposed fresh, he found, gave good results with an exposure of twice as long as that required for wet plates; but at the expiration of a week the exposure required considerably increasing, and under such circumstances developed better with alkaline pyrogallic solutions than with the iron solution recommended by Mr. Gordon. The coffee process has also received some attention during the year, and M. de Constant has found that with the addition of gum, excellent results are obtained. Mr. Sutton announced a new alkaline process, having some analogy to Mr. Bartholomew's gelatine and carbonate of soda process. In the recent process, the alkaline conditions are more thoroughly carried out, and alkaline development employed. The process was somewhat complicated, but gave hope of sensitiveness. No trustworthy reports of its successful application have reached us.

The impulse given to photographic portraitists a couple of years ago by the exhibition of the works of M. Adam-Salomon has continued, and borne good fruit in the higher art qualities which have distinguished the works of many of the portraitists in this country, the especial class of portraiture which has been designated as Salomonesque having come extensively into vogue, with, however, in many cases, sufficient modification to stamp the individuality of each producer upon his pictures. The pleasing new style of portraiture introduced by Mr. Sarony, and named photo-crayons, has attracted considerable attention, and has been largely in demand.

The very successful exhibition of the Photographic Society, held in November, afforded ample illustration of the advance of art-qualities in various branches of photography. The practice of combination printing, as one of the aids to increasing the plasticity of photography, steadily increases in the hands of photographers who aim at the production of pictorial effect, notwithstanding the strange abuse which the system has received, both from capable and incapable writers, who inveigh against it as of necessity untruthful. These writers overlook the fact that truth, in any form of art, depends rather on the capacity of the artist to perceive and embody truth, than on the mechanical means—whether pencil, camera, or printing-frame—by which the truth is embodied. The most perfect mechanical means may fail to render truth in incapable hands, and thus the simplest form of photography be made false and misleading; whilst, in the hands of a cultivated and conscientious artist, combination printing will always be kept under the governance of art truth.

Photography gradually takes its place more firmly and widely as a recognized branch of economics. Its applications are more numerous, extensive, and valuable, and, in many respects, its commercial prospects are improving.

The societies generally are flourishing, but some have ceased to meet, and the North London has ceased to exist. It had done good service during many years, but gradually declined, having, as its committee concluded, done its work. The Photographic Society of London and the South London Society are active and flourishing.

Death has removed some veterans in the art. Mr. Roger Fenton, one of the earliest and most successful photographers, and the practical founder of the Photographic Society, died during the year; Mr. Hockin, an early photographer and skilful photographic chemist, also died; Mr. Petschler, a gentleman whose name was familiarly known amongst dry-plate workers, died also.

PHOTO-MECHANICAL PRINTING.

The success of Herr Albert in photo-mechanical printing has stimulated experiment in this direction amazingly on the Continent, in this country, and in America; but, so far as we can judge from the examples which have come under our attention, none as yet approach in excellence those produced in Munich by Herr Albert. The fault of his earlier impressions was that common to most processes based on the lithographic principle, a certain woolliness and want of vigour in the deep blacks. In more recent examples this defect appears to have been overcome. In a recent packet of specimens possessing unusual beauty, richness, and depth, and the surface having been treated with some waterproof preparation, probably collodion, the impression very closely resembles exceedingly perfect prints on albuminized paper. As yet no arrangements exist for working this process in England; but we believe plans are in progress by which this method of working will be established here.

Most nearly resembling those of Albert are the prints produced by a similar process, styled "Lichtdruck," worked in Berlin by Ohm and Grossman. We have not seen many examples, but these, although not bad viewed as photo-mechanical prints, are decidedly inferior to those of Albert. An agent has been appointed in this country, we understand, and it is the intention to supply lessons and licence to practise the process for a fixed fee. We shall await with interest an explanation of the need for a licence to practise an unpatented process. A somewhat bitter antagonism exists between the Munich and Berlin establishments, into the merits of which we are unable to enter; but we may remark that Herr Albert writes to us to say that the process practised in the latter is an early and imperfect method of his own, yielding only a limited number of impressions. Experience will determine this question.

We have received within the last few days some examples of photo-mechanical printing by Edwards and Kidd, by a method recently patented, but of which no particulars are yet divulged. The examples consist of reproductions and subjects from nature, and possess characteristics in many respects different from most of the results of photo-mechanical printing we have seen. Judging from the appearance of the prints, we are disposed to regard them as impressions from intaglio plates, some of the impressions presenting an effect which suggests a mixture of photographic and hand labour. The best example is a reproduction from an engraving by Albert Durer, which is crisp and perfect. A vignette portrait from nature possesses many excellent qualities. We shall look with much interest for an opportunity of examining the practical results of the process, as the early examples possess decided promise.

We have been favoured by our friend Mr. Wilson, of Philadelphia, with some examples of a similar process to that of Albert, by Mr. Delius, of Waterbury, who has adopted our suggestion of styling the prints "photo-collographs" in contradistinction to photo-lithographs. The specimens we have received are manifestly the results of early experiment, for whilst they suggest the possibilities of excellence, they also illustrate the presence of the special difficulties which beset processes of this kind, and which only experience in working can enable the operator to overcome. We look with interest for the examples of progress by this gentleman.

Another illustration of mechanical printing received during the past year comes from Canada, and is very ambitious in its aim. It is by the "Leggotype" process, which we noticed some time ago, a process of photo-block printing, and is employed in producing illustrations for the *Canadian Illustrated News*, a new journal published in Montreal. The attempts are very ambitious. One example is a ten by eight portrait of Prince Arthur, from a negative by Notman. The portrait we can only regard as a failure; but a two-page block, eighteen inches by fourteen, produced by the process from a sketch in indian-ink, representing the reception of Prince Arthur in Montreal, possesses some elements of excellence. The editor of the journal refers to it in terms of satisfaction, as being a faithful reproduction of the drawing produced in an incredibly short space of time, the photographer taking the place of the engraver. The Leggotype process is a method of obtaining a surface printing block from a negative by means of a bichromated gelatine film and the electrotype process. The details which reached us when the process was announced were only suited to the reproduction of subjects in line or stipple; but here subjects from nature are attempted, gradation being obtained by a grain resembling the texture of a woven fabric, a veil of such a character being evidently interposed between the photographic negative and the gelatino film during exposure. Very delicate or perfect results cannot, it is to be feared, be obtained by such methods.

In this country we have not seen any recent progress in photo-block printing, if we except the steady improvements made in his method by Mr. Dallas. It is a somewhat singular fact that with several photo-block processes in existence, apparently capable of yielding good work, and especially suited to reproductive processes, so little has been done in utilizing any of them in commercial enterprise. This fate, indeed, seems to attend photo-mechanical printing processes generally in this country. The Photo-galvanographic Company, and Mr. Pretsch's methods, utterly failed as commercial projects. Mr. Woodbury's photo-relief process, having had three starts commercially, has again come to grief, and the Company is now in liquidation. That this is due rather to the unsuitable hands into which it has fallen than to any inherent defect in the process, is made manifest by the fact that in Paris, where it has been taken in hand by a first-class engraving and publishing firm, Messrs. Goupil and Co., it is working successfully and satisfactorily. In photo-lithography, Mr. Osborne failed to stimulate commercial enterprise to take up his process in this country, which, taken to America, was readily appreciated, and he is now directing a large and successful establishment belonging to a company which was at once formed to work the process. These facts are not encouraging to experimentalists in this country engaged in working out such processes; but we believe their time will come.

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CHEMICAL "HALATION" IN ECLIPSE PHOTOGRAPHS.

In noticing the admirable photographs of the recent solar eclipse obtained under the superintendence of Professor Henry Morton, we mentioned the existence of the line of increased reduction on the sun's disc in immediate contact with the dark image of the moon, as probably due to photographic causes. From the appearance of the prints, the increased deposit seemed to us to have been due to the reduction on the sun's image of the nitrate of silver belonging to that part of the plate where the dark edge of the moon had not impressed the plate sufficiently to determine reduction upon it. In a correspondence with Professor Morton on this subject, he pointed out that there were circumstances which threw doubt on this explanation, especially mentioning the fact that the phenomenon was recorded by the thermometer as well as by photography.

In a letter just received from Professor Morton, recording some experiments undertaken to decide the question, he remarks, "Your explanation of the bright line in the photograph is, I think, the true one;" and he forwards a proof of an "artificial eclipse picture" produced in the course of his experiments which aptly verifies the explanation in question. We subjoin the communication on the subject, which Professor Morton intends to publish in the *Journal of the Franklin Institute* for the present month :—

"*Cause of Bright Line on Partial-Phase Eclipse Pictures.* By Professor H. Morton.—During the progress of the eclipse of August 7th. I observed on the negatives taken during the partial phase by the section of my party with which I had located myself, a decided increase in the opacity of the silver deposit in immediate contact with the advancing edge of the moon. When, after our return to Philadelphia, all the negatives taken by the other two sections were handed over to me, I found the same characteristic appearance varying only slightly in degree, to distinguish all of them, and this had, of course, been noticed by those engaged in making the pictures. In fact, many remarks have been made upon this point, and some deductions drawn from it.

"On the paper prints prepared from these negatives this local density produced a line of light in contact with the moon's limb.

"An appearance similar to this had been observed by Professor Alexander, in the photographs taken during the eclipse of 1860, as also by Mr. De la Rue, and while ascribed by Professor Challis and Professor Alexander to a very rare lunar atmosphere, had been explained by Mr. De la Rue and the Astronomer-Royal, as a subjective effect

The Astronomer-Royal had, moreover, shown, in papers published in the *Monthly Notices* of the Royal Society, 1863, November 13th, and 1864, June 10th, that no such effect would be produced by a lunar atmosphere, were it present. He, therefore, very justly discards such a supposition, and, by satisfactory experiments, shows that the light line in *the prints under his examination* is an optical illusion, and not an existing fact.

"These experiments, however, when applied to good prints of our pictures, did not show the same results, and, beside, the actual opacity of the negatives seemed to preclude the above explanation as one accounting for the *entire* effect.

"I therefore made the following experiment: I converted one of the solar pictures, taken soon after first contact, into a crescent, by pasting partly over it a dark circular piece cut from another print. This showed a faint line of light such as results from contrast, and which was, no doubt, found in the pictures examined by the Astronomer-Royal.

"I then had this artificial eclipse-picture photographed (through the kindness of Mr. James Cremer), when negatives were produced showing a dense deposit along the lunar edge, and giving prints which showed a bright line in the same place far more decided than that seen in the artificial original.

"It thus appears that the effect observed in these eclipse pictures, while not due to any lunar inflection of sunlight, is also not due to an optical effect of contrast solely, but is in great part due to a chemical action which may be explained by what we know of the chemical reactions concerned in the production of a negative.

"It is well known that the development of a negative depends upon the presence of free nitrate of silver in the film, and that a great strengthening or intensifying may be produced by re-immersion in the silver bath, and a second application of the developer. Now, in the present case, part of the plate representing the dark edge of the moon, and, therefore, not acted upon, furnishes a reservoir of nitrate of silver, imbibed by the collodion film, which, during the development, penetrates for a short distance into the portion representing the *luminous* area of the sun, whose supply of free nitrate was exhausted by the reaction which occurred at the first moment when the developer was applied.

"My conclusion, then, is, that while a certain effect in the paper prints is, and was on former occasions, due to 'contrast,' yet in the present instance the peculiar appearance of the negatives, and most of that seen on the prints, is the result of a chemical action such as I have described, and does not represent any celestial phenomenon. The *appearance* of a bright line in the same place, which has been noted by several observers, is, we believe, due simply to the contrast of the sharply defined lunar edge, which produces the faint line above-mentioned, in the artificial eclipse-picture before described."

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ONE PRINT FROM TWO NEGATIVES.

A novel form of double printing has just been patented in America by Mr. Egbert Guy Foux, of Baltimore. It consists not in producing one picture from a series of negatives of different parts of the subject, but of producing one soft picture by the superposition of one negative over another, the two images being identical in all respects, the effect being somewhat similar to the softened mezzotint effect produced by printing through a medium. We subjoin the specification of the patent, and may add that our esteemed collaborateur Mr. Wilson, of Philadelphia, speaks very highly of the results produced. The inventor says:—

The object of my invention relates to the production, by the use of two or more negatives, of a sharp, soft, and natural photographic print in lights and shadows, with all the sharpness obtained by the original process of printing, with or from a single negative.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I produce two or more *fac simile* negatives of the same object, which negatives are placed in contact with each other in such a manner as to bring the lights and shades of each negative directly opposite. They are then exposed—with the prepared paper for printing in contact with the negative—to the sun's rays, and printed in the usual manner, which process is also applicable to solar prints.

By this process a photographic print is produced, which is superior to any other production, and is applicable to photography in all its branches.

The lights and shadows are so softly toned and blended by this process that they produce the most pleasing, natural, and life-like effects. Having thus described my invention, what I claim, and desire to secure by letters patent, is—

The combination of two or more negatives for the purpose of producing photographic prints, &c.

PHOTOGRAPHY IN AMERICA.

THE readers of the PHOTOGRAPHIC NEWS are kept so fully and carefully informed as to what is going on in the world of interest and value to them, that I need hardly hope to be of much service to them. Yet, I think, there is a freshness and an individuality about a letter which never characterizes a regularly contributed article. If I have a friend who is privileged to travel in foreign lands, I prize his letters, written to me for my pleasure and for my information, much more than I do his book, written for the public, though it give an account of the same sights and the same adventures. Believing that there are others who think as I do, I propose, from time to time, to write a letter to the readers of the NEWS, informing them as to what is going on this side of the Atlantic. American and English photographers are quite as closely allied to each other as are the two great nations in their interests.

There is a great difference between the two, however; the English photographer, feeling the shortcomings of his art, will set to work patiently and persistently, plodding and planning to perfect some process, by which improvement may be gained, and the art elevated and extended in its influence. From him come many of our most valuable and useful processes and improvements, and much of the artistic element which is now happily beginning to pervade the craft. But the American photographer, as a rule, has not the patience to follow the example of his English *confrere*. He is too busy, he thinks. He will pay, and pay liberally, for any improved method of working; but, even knowing its want, he will not work it out himself. His inventive genius runs in the direction of mechanical appliances, such as pressure frames, dark tents, camera boxes, &c. But to work out a carbon, or a photo-relief, or photo-lithographic process—let some one else do that—he will not take the time.

However, given the process and the apparatus, probably, in a side-by-side contest, the American photographer would come out far ahead in the number of good negatives he would produce in a day. I have noticed—for we have many English photographers here—that some of our very best artists are mixed; *i.e.*, English photographers Americanized. The majority of our profession here are much better manipulators than they are artists, and I am not sure but it is so all over the world. If we had more Robinsons, and Blanchards, and Notmans, and Kurtz's, there would be a wide improvement in the pictures produced. We all need to cultivate our tastes, educate our eyes, and to evince more feeling in our work.

Mr. Robinson's new work supplies a want in this direction, and it would be a glorious thing if every photographer in the world would study, and understand, and practise the principles laid down therein. It would place a power in the hands of photography that would ever be felt. I have had much pleasure and profit in reading it and studying it, and shall push it into the hands of all I can, for I know good will result therefrom. It teaches so plainly and so simply the rules which should govern the photographer in his movements in the studio, that all can understand it. It is a much greater pleasure to work intelligently—first of all knowing what it is desirable to produce, and then feeling sure of the right way to do it—than to work in the dark. Mr. Robinson's work opens one's eyes on many subjects, clears away the fog, and brightens the ideas wonderfully. No intelligent photographer can read this book without much profit, and if he practises the lessons taught therein, his work will be much easier, and his effects much more artistic and pleasing.

I have watched the progress of the Albert process with a great deal of interest. Much has been written about it, and many beautiful results produced by it, yet my faith in its capabilities has always been weak. It is not yet what we want, though he may still improve it, and secure all that can be desired. His process was recently patented in this country, and his attorney is making effort to raise a company to work it. What field there is for it I can hardly see. It is confined in its application, and in one of those for which it seems well adapted—*i.e.*, the reproduction of engravings and drawings—it will have an active rival in the Osborne process. It is also likely to have another rival in all of its applications in another process, which is now being worked up to very perfect results by a correspondent, Mr. W. Delius, Waterbury, Conn. I enclose you some prints by his process, which he calls "collographs." He prints from a gelatine film on a glass plate. What I enclose are the results of his early experiments. You will observe that they are upon all classes of paper, and one of them on a common yellow envelope. Even at this early stage his prints are quite up to many I have seen by Albert; and that much better results will soon be obtained it is only fair to expect. I have but few particulars from Mr. Delius as yet, but hope to give more information in my next letter. As you observe, he prints on varied colours. I am afraid, however, that the great weakness of all similar processes is in the necessity of having to print from gelatine. If, as in lithography, the design have to be frequently cleaned with a wet sponge, we all know that the gelatine must soon swell, and the image be destroyed.

The Woodbury process promises to be the printing process of the future. His patents for the United States have been sold, and works for the extensive practice of the process will, no doubt, be erected here during the coming year, and I hope soon to see it worked in all its details. Nothing more charmingly beautiful and perfect has ever been produced than the specimens on glass sent here by Mr. Woodbury. His paper prints are also remarkably fine, and, with few exceptions, silver printing rarely excels them.

The use of the alkaline bath is attracting considerable attention here at present. The committee appointed by the Photographic Section of the American Institute, N.Y., to investigate its merits, will soon report, and the result of their experiments is looked for with much interest. A correspondent in Ohio, Mr. P. Hawk, writes me that he has worked an alkaline bath for some time, and his experience is that it greatly lessens the exposure in the camera, renders the shadows transparent, and produces negatives of better printing qualities than he has ever secured with an acid or neutral bath. He uses the formula recommended in the **News** some months ago. The long time necessary to prepare the bath is one drawback; but not so much so after one has made the test, and is satisfied to practise that method altogether.

It is no longer considered a crime here to retouch the negative, if, by so doing, it may be improved. The charming work sent over from Germany and France has proselyted many sceptical ones, and now some of our most eminent artists retouch all their negatives. It is certainly a valuable power in the hands of the photographer; but it requires much brains to practise it aright. The great thing is to know where to retouch—*i.e.*, to be able to discover what the negative needs to make it perfect—and then to apply the pencil or the brush in such a way as to secure the result desired. When it is well and carefully done the result is most charming. Several suggestions have been made as to the best plan of securing a tooth for the pencil on the varnished surface. Mr. Griswold writes me that he uses a mixture of emery powder and sal soda, ground very fine together, which he applies with a small brush. Borax or any other dry alkali would probably be quite as effective. The alkali seems to have a slightly solvent effect on the varnish, which, with the grinding quality of the emery, gives an excellent biting surface for the pencil.

One of the latest improvements in photography has been patented here secretly, by Mr. F. Glessner, for producing artificial skies in landscape photographs. In his specification he rehearses the well-known difficulties met with in producing natural skies in landscape negatives, and then proceeds to explain his method of securing the substitute. The negative is made in the usual way, and the entire sky painted out. A sky-plate is then produced by painting upon a piece of glass, with opaque colour, the light, position of the clouds, or other light objects which it is desirable to introduce into the sky. All objects (such as trees, telegraph poles, &c.) that extend up into the sky in the negative are also painted over, so as to preserve the lights of the object as printed by the landscape negative. In printing, a shiftable screen or shade is employed, by which the printer can expose one part only of the paper while under the sky-plate to the action of the light, so as to print the sky with a gradation of tint from the top to the horizon, or in any other direction that may be desired. If a more highly finished sky is needed, a perforated shade is so held as to allow a pencil of light through the perforation to fall upon such parts of the sky or clouds as it is thought desirable to print deeper to produce the best effect. In the same manner sharply defined objects—such as a flash of lightning—may be printed on the under side of the negative, and such objects as clouds on the upper side. A flock of birds, or gulls, or other dark objects, are obtained in the sky by a separate negative, whose entire under-surface, with the exception of the figures, is stopped out. When desirable to produce a gradated sky by diffused light, either with or without the sky-plates, a bent card-board or other shade is secured in such a position as to allow the strongest light to fall upon the parts of the picture to be printed the deepest. The shades alluded to are usually moved during printing, but may be fastened permanently, and the negative moved under them. I have seen some copies of prints made by Mr. Glessner, which are really very effective.

It has been a great pleasure to notice the success of your late Society Exhibition in Conduit Street. I look upon such as productive of much good. They make men stop and think, and then push them on and up to greater perfection in their work. There is no better way in the world to improve than to study the work, the faults, and the excellences, of others; and, no doubt, there are many wiser heads among the fraternity now than there were before the exhibition. Its influence will be felt, and visibly too, as your next exhibition will doubtless testify. We hold our next annual exhibition at Cleveland, Ohio, in June next, where I hope many of the Conduit Street pictures will also be sent for us to study and enjoy. The rules and regulations of the Executive Committee I shall communicate soon.—Very truly yours, Edward L. Wilson.

Philadelphia, December 14th, 1869.

Foreign Miscellanea.

The French Photographic Society have issued a prospectus relative to the forthcoming Photographic Exhibition for 1870. The gathering of last year having been so successful, the Society contemplate the formation of a collection of a still larger and more important character. To accomplish this end, they invite the co-operation of all photographers, whether native or foreign, amateur or professional, and promise the award of medals and honourable mentions to exhibitors of the best description of work. A committee, formed of members of the French Photographic Society, will be at once formed, and the duty of accepting and hanging the pictures, as likewise that of awarding of prizes, will be entrusted to this body. The collection will form part of the annual exhibition of Fine Arts at the Palais de l'Industrie in the Champs Elysées, which opens on the 1st May; it is imperatively necessary, therefore, that all photographs should arrive at their destination not later than the 10th April next. Applications for space, which will be charged for at the rate of ten francs per square metre, should be sent in not later than the 15th March to the Secretary, M. Laulerie, 9, Rue Cadet, Paris, who will furnish every information. Copies of the regulations will be shortly forwarded to the secretaries of all photographic societies in France and abroad.

M. Scamoni, of St. Petersburg, forwarded to the Berlin Society for the advancement of photography an interesting note on heliography, in which he criticises many of the present mechanical printing processes; he also forwarded for the inspection of the Society some prints produced by a method the details of which he fully described.

The third part of Dr. Vogel's "Manual of Photography" is in the press.

During the recent trial of Troppman, the Pantin murderer, photography was called in on several occasions as an important witness; pictures of the different scenes of the outrage, as also photographs of the victims, were exhibited by the prosecution for the information of the jury.

MM. Schaeffner and Mohr have made a further communication regarding the employment of carbonate of silver paper. Instead of submitting the printing pads to the fumes of ammonia, it is sufficient to expose the paper only to the action of the vapour, allowing the printing material to remain in the fuming-box for the space of twenty or thirty minutes; the paper should be placed in the printing frames as soon as it leaves the box, and be covered with a sheet of parchment paper, which prevents the escape of the ammonia. The amount of ammonia absorbed by the carbonate of silver-paper, and preserved between the negative and the impermeable paper, should be sufficient to impart enough vigour to the print. The carbonate of silver paper, before fuming, can be preserved for a considerable period, sheltered from the light. The toning may be conducted with any of the ordinary baths if the prints are previously washed; that more particularly recommended is the sulphocyanide of ammonia bath, which does not necessitate the washing of the print, and is thus compounded:—

Sulphocyanide of ammonium	30	grammes
Acetate of soda	30	,,
Chloride of sodium	15	,,
Water...	1000	,,
Chloride of gold, dissolved in a little distilled water	½	,,

A slight addition of chloride of gold is made, as required, from time to time, to the bath, which is endowed with good keeping qualities.

According to the *Photographisches Archiv*, the most difficult operation in connection with the Albert and other similar mechanical processes is the perfect adhesion of the bichromate film to the surface of the glass: gum, myrrh, Tolu balsam, and lupuline are, for this reason, added to the gelatine and bichromate, as also small quantities of nitrate of silver and iodide of cadmium, which, as Fox Talbot many years ago remarked, impart a slight grain to the compound. The best form of printing-press is still open to discussion, and M. Wothly, of Aix-la-Chapelle—to whom, by-the-bye, M. Albert is said to have offered twenty-five thousand florins for his process—employs a species of wringing-machine, similar to those used in washing establishments, for the purpose.

M. Petersen, of Copenhagen, has purchased the right to practise the Alberttype process in Denmark for 10,000 francs, although it is rumoured that another photographer in that city, M. Schroder, is working a similar process of his own invention. A M. Manecke, of Leipsic, has also a process, the secret of which he offers to sell for a hundred thalers (fifteen pounds).

Enlarging by means of Dr. Van Monckhoven's new artificial light is being carried on by Viennese photographers. Dr. Heid, a well-known portraitist, has been very successful in his employment of the apparatus.

M. Fritz Luckardt discusses in the *Correspondenz* the best means of producing Rembrandt effects in portraiture, and accompanies his remarks with a carte illustration executed with his usual care.

Dingler's Polytechnisches Journal has an exhaustive article on various gums and resins, drawn up by Dr. Sacc, of Neuenburg, who enumerates the results of a series of experiments undertaken to test their characters. A perusal of this communication will be of interest to those occupied in the production of photographic varnishes.

M. Kleffel edits, this year, a year-book of photography entitled "Das Neueste aus dem Gebiete der Photographie." This is, we believe, the first and only year-book of photography published in Germany. M. Davanne brings out an annual in Paris, and M. Wilson one in Philadelphia.

The Paris newspapers are mostly supported by regular subscribers, or, as it is termed, by *abonnement*. At the commencement of a new year a bonus is usually accorded to the supporters of each periodical, and this, in many instances, takes the form of a dozen cartes-de-visite, which are taken gratuitously for the subscriber on presenting himself to the studio indicated by the journal.

The history of photography has recently been further enlightened by M. Blanquart-Evrard, a contemporary of Fox Talbot. At a recent meeting of the Lille Academy of Science, M. Blanquart read a concise, and, on the whole, impartial, account of the first steps in the elaboration of photography. It is as interesting as it is important to have the testimony of a veteran in the art like M. Blanquart.

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FORTHCOMING FRENCH PHOTOGRAPHIC EXHIBITION.

We have received from the Secretary of the French Photographic Society the following announcement of conditions upon which the forthcoming exhibition will be conducted. The circular proceeds as follows:—

"The French Photographic Society, until the present time, have believed it right to abstain from awarding prizes at its successive exhibitions. It has decided, at its last meeting, that at the coming exhibition of 1870 it will place medals and honourable mentions at the disposal of a special jury for distribution under conditions which will be subsequently announced.

"The eagerness and the interest with which the last exhibition was visited make the committee call more warmly on practical and amateur photographers, both French and foreign, to give all possible *eclat* to the coming exhibition, at which the distribution of medals will be inaugurated.

"The *Bulletin* of the Society will contain, in its next number of January, 1870, the complete rules of the Exhibition, of which we mention here the principal conditions. It will give the list of the jury of selection, the admission of prints, and indicate the conditions under which will be named the special jury for awards.

"The opening of the Exhibition will take place on the 1st of May, 1870, at the same time as l'Exposition des Beaux Arts, and all packages should be sent free to the Palais de l'Industrie, Porte No. 1, from the 1st to the 10th of April at latest. This date is absolute.

"The Society will undertake all the expenses of organization, hanging, and arrangement, for a fixed charge of ten francs per superficial metre of space occupied by the frames. Special contribution in glass cases or upon tables will pay the same amount calculated by measurement of all the slides of its space.

"These photographers who wish to exhibit should give notice as soon as possible before the 15th of March, and they should then state the space they desire to occupy.

"In the course of January a full copy of all the rules, completely detailed, will be sent to the Secretaries of both French and foreign photographic societies. A copy will always be sent to any one writing for it to M. Laulerie, Acting-Secretary of the Society, Rue Cadet, 9.

The Committee.

Honorary President—M. Regnault.
President of the Society—M. Balard.
President of the Committee—M. Peligot.
Vice-President of the Committee—M. Davanne.
General Secretary—M. Bayard.
Secretary—Treasurer—M. Fortier.
Acting-Secretary—M. Laulerie.

All parcels should be addressed to the Secretary of the Society, M. Laulerie, Rue Cadet, 9.

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HOW TO CLEAN PLATES.

BY B. J. EDWARDS.

It will be admitted by all that one of the first essentials to the production of a perfect negative is a "clean plate." How this is obtained may not much matter, so that the result is the same; but, as a rule, in photography, the simpler the plan the better. For the benefit of those of your readers who may have found any difficulty in getting clean plates at all times, I propose to describe a plan which I have found successful in daily practice for ten years, during which time I do not recollect having been troubled with a dirty plate, although I have used several thousands of old varnished negatives; these I consider quite as good as new plates, if treated on the following plan.

Into a flat porcelain dish put two ounces nitric acid and sixteen ounces of water; immerse the plates or varnished negatives from which it is desired to remove the film; let them remain at least twelve hours, or until wanted (they will take no harm if soaked for a month, provided no air-bubbles are allowed to remain between the plates); when required for use, take them out one by one, and hold them under the tap, allowing a stream of water to flow over the plate, when the film will slide off. Should any small portions adhere to the glass, a little friction with the finger will soon cause them to be carried away. After slightly draining, dry the plates with a clean cloth (do not allow them to dry spontaneously), and rub over the side to be coated with a small piece of linen rag which has been moistened with a few drops of old collodion or alcohol, and immediately polish with a soft chamois leather, which, when new, should be rinsed in at least half-a-dozen changes of clean soft water. One side of the leather (which need never be touched by the hands) should be kept for polishing the plates; if this precaution be observed, the leather will last a very long time.

New plates may be treated in the same way, except that it will only be necessary for them to remain half an hour in the acid and water. I have been particular in describing the details of this simple operation, not because I attach undue importance to "sharpness and cleanness," but because I feel that anything which will lessen the anxiety of the photographer with regard to the little chemical and mechanical difficulties in the process will be a gain, inasmuch as it will enable him to devote more attention to those higher qualities in the negative on which its claim to be called a picture must depend.

I wish it to be understood that I do not claim the above plan as new. Probably it is already in use by many of your readers. If not, let them try it. All who have adopted it agree that, whatever else may go wrong, they do not know what it is to have a "dirty plate."

TRANSFERRING FILMS.

How to Take a Negative from the Plate, and Print from either Side.

BY DAVID DUNCAN.

It is by no means undesirable to be enabled to print from both sides of a negative in an ordinary photographic printing-frame; a simple and effective method of making reversed negatives for various requirements of the art likewise is "a consummation devoutly to be wished."

The methods of making inverted negatives at present known are both troublesome and unsatisfactory; for example:—First, there is the plan in which a mirror is used; secondly, by making a transparency, and a reversed negative from that; thirdly, by taking the picture through the glass plate, instead of direct on the collodion film. Excellent negatives can be obtained by the latter plan, but the glass must be faultless, free from drops of bath solution, and not defective in itself by air-bubbles, scratches, &c., to say nothing of the difficulty in working up such a negative of an engraving to the required density, the image being formed on the side of the collodion film next to the glass.

It is well known that the various suggestions which have been made, from time to time, for the removal of the exposed film from the plate, are not unattended with danger to the picture itself, nor so complete in the *modus operandi* as they might be. I therefore, as a votary of the photographic art, take pleasure in publishing a method which, to my mind, is both simple and effective, believing it will be of service to the profession. If I cannot claim for the whole of my plan originality, I can, at least, say it is new. It is not unlike Mr. W. Woodbury's suggestion, published in the Year-Book of Photography some time ago; but be it remembered that, although castor oil collodion has been used before, so has albumen, wax, silver, glass, experience, and brains. So much, then, by way of preface.

1. Prepare and filter the following solution:—

White of	1 egg
Water	8 ounces.

2. Take a clean glass plate, and coat one side with a thin film of wax (I prefer to rub the wax on dry; *i.e.*, not dissolved in any solvent, and then nearly rub off again with a clean piece of flannel or cloth); coat the waxed side with good, plain collodion; when firmly set, wash under a gentle stream from a tap until the water flows well and smoothly over it; pour over, carefully, sufficient of the albumen solution, and put aside to dry. A number of plates can be prepared in like manner; they will keep a considerable time.

3. When about to take the picture, take one of the prepared plates, coat, sensitize, expose, develop it in the usual way; when thoroughly washed, flood the exposed film with the albumen solution, and dry.

4. When the negative is dry, carefully level it on a levelling-stand, and cover with plain collodion containing about two per cent. of castor oil; when that has dried, a knife can be run round the edges of the plate, and the picture, imprisoned between two films of albumen and two films of collodion, lifted from the glass ready for printing from.

The advantages and simplicity of the above method will be easily recognized.

A transferred negative, or transparency, can be again attached to a piece of glass by flowing over a thin solution of gelatine, carefully laying the film thereon, and pressing gently with the hands.

Negatives or transparencies made in the manner described can be stored between the pages of a book, thousands occupying less space than a hundred or so on glass. They can be likewise rendered waterproof by immersion in a soluble varnish, and hanging up by clips until dry. The plates can be prepared by every photographer a month or so before using. If cleanliness is observed, the bath is not in the least affected. And, finally, there is but one precaution to be observed, and that is, be sure the prepared plate is not damp ere it is coated with sensitive collodion, and the picture taken.

LIGHTING THE SITTER, OR PRODUCING EFFECTS IN PORTRAITURE ONLY.

BY ROBERT GILLO.

Many effects that are exceedingly beautiful are totally unsuited to be photographed, on account of that effect either being due to or influenced by colour. For instance, how many effects have we not seen of faces in shadow lit up by a reflection from, perhaps, a red object? And yet, if any effect of this kind be photographed, we know what the result would be: certainly, not anything like the effect we saw in the model. Hence our effect must depend on light and shade principally, if not entirely. The larger the amount of light that can be admitted the better, provided it produces the required effect. If results can be obtained in the open air, they will be the most rapid.

In open-air portraiture there are several difficulties to be contended with; many of them, at times, cannot be overcome: first, strong reflections from the ground, and sometimes other surfaces; second, the sitter is often obliged to look towards the sky or strong light, so that it is only with the greatest difficulty he can keep his eyes open at all; but even if he should succeed, the reflection destroys all expression, and gives a weak and washed-out effect to an eye naturally beaming with brilliancy and intelligence.

The most convenient situation is a corner, so that the figure may have a suitable background; or a temporary one may be erected, and a long and high wall on one side, close to the sitter, the object being to shut out all light from one side, except that which is reflected from the wall. The eyes should look towards some agreeable object, as a large tree or building if a dark colour, but on no account stare at the sky.

There is, of course, one fatal objection to portraiture out of doors: I mean wind and weather; this obliges us to have recourse to the glass house.

There may be made a broad distinction between two effects, the one full of light, soft and delicate, free from any dark shadows, suitable for small pictures, vignettes, and particularly for ladies' portraits; the other brilliant, with strong contrast of light and shade. I believe Adam-Salomon's pictures possess this effect in the greatest degree, together with great delicacy and softness. He seems to me to possess both these styles combined in great excellence, more so than either of those who have imitated his works. A glass house suitable for one effect will not do for the other. I do not mean to say that both effects may not be got in the same glass house by an arrangement of blinds, &c. For the soft and delicate effect a house with an average amount of front light is necessary, for, obviously, the nearer the direction of the light is to the direction of the camera, with regard to the sitter, the less shadow there will be, and the flatter the result; on the contrary, the more the light strikes across the glass house the more vigorous the shadows and the more brilliant the result. But this kind of lighting is very apt to develop all accidental scars, blemishes, &c., which it is desirable to conceal. Hence we want, for general purposes, the greatest amount of light admitted—not a front nor at the side entirely—but no doubt the best is what is generally known as a high side light. I believe a mistake is often made in this way. We will imagine that the light is, at present, a strong side light; the effects obtained in this house are too violent in contrast, and lack softness. To remedy this a new opening is made in front; or, what is nearly equivalent, a reflector is used. This certainly diminishes one evil, but introduces another, for there evidently will be conflicting lights. I think it may be laid down as a canon that to get a fine effect the light should come in one direction only.

It is a rule in art that there should be a point of light, a point of dark; now if light comes from more than one direction there must be two points of light and two points of dark, which in great measure destroy each other, and the effect is greatly spoilt thereby. So that the more the source of light is confined to one direction the better the result. What that direction should be depends upon the effect desired; nevertheless, a reflection is often very useful, but requires to be used with judgment. One great evil in nearly all glass houses I have seen is that they are too light a colour inside: there seems to be a feeling of painting or papering the walls as light as possible, so that they may reflect light to shorten exposure. I think there never was a greater mistake. In fact, I should go as far as to make the inside black. I have never seen it noticed, but I believe that a great deal of the beauty of Adam-Salomon's pictures is due to his glass house being lined with a dark-coloured felt or baize. The glass house in which I work not being very large, and doing a great deal of work besides portraiture, induced me to run out a glass house at right angles to the other; it is a simple ridge roof of angle 45°, one side glass, except two feet at the end, one foot at the floor, and half of the roof throughout its entire length, except two feet over the sitter. I first painted this house inside a light pink, and tried the effect; there was a blaze of light, but the pictures were flat, weak, foggy looking things, and requiring a great deal of after-intensification to get the negatives dense enough for printing. I then painted it a deep purple-red. This house now produces better results than the other did with all the paraphernalia of blinds, &c., and with vastly shorter exposures. There is one subject that I think can be explained, I mean that of shutting out light to shorten exposure. It is evident that the more light admitted, the more light must be reflected by the model on to the plate; but yet it is a fact that shorter exposures can be given in a glass house, with judicious lighting, than can be given in one with no end of square feet of glass.

I think this is one reason. When a plate is developed after exposure in a glass house where all is light, the image rushes out, and we stop the development to prevent fogging; but the image is poor and thin, and after-intensification has to be resorted to; but yet the best results are to be obtained in such a house in this way. In the other case we prolong the development, seeing that the shadows keep clear, and then have no need to intensify, so that we produce a pleasing and good result with a less exposure. This also points to a great saving of chemicals and time, that is of far greater importance.

I have worked for several years in a glass house with a tunnel and sloping front light. I can tell those who have not tried this form of house that it is a great trouble, and it is only by shutting out nearly all the front light that good results can be obtained, and hence the exposure is prolonged for want of light. I believe the best form is similar to that used by Mr. Robinson, of Tunbridge Wells: a ridge roof, with glass on the north side, making the same or a greater angle with the earth that the sun does on the longest day (hence the sun can never shine in the house). In addition, the north side is glass, except one foot at the ground, and about two feet at each end. One objection is, that the light always must be used on the same side of the sitter, unless there is a background at either end.

Since variety is the great principle of beauty, the background should possess this quality. There are several ways of producing this: as tilting forward, turning it sideways, throwing a shadow across it, all of which are useful; but I think it is a great pity that there are not manufactured genuine gradated backgrounds, either from top to bottom, or from one side to the other, or diagonally, as the case may be. No doubt the reason is the difficulty of producing anything approaching a perfect gradation; but if it was not quite even, it would still be very useful, as it need not be placed close to the sitter, and, therefore, from being out of focus, would be greatly softened. The introduction of such backgrounds would, I believe, do a great deal towards improving the character of the work of professional photographers in general.

LANDSCAPE PHOTOGRAPHY.

BY WILLIAM BROOKS.

According to promise, I send you a brief account of my operations in the field in producing the pictures exhibited by me at several exhibitions during last year. I must commence with the old, old tale; that is, I have nothing new to say. It may be of interest to some to be reminded of something they already know. My formulæ stand thus:—

Collodion.—I generally use Mawson's, and sometimes a bromo-iodized cadmium collodion of my own make.

Bath.

Johnson and Son's triple crystallized nitrate of silver	35 grains
Water	1 ounce.

Partially iodized in the usual way with iodide of potassium.

Developer.

No. 1.—	Ferri protosulph.	10 grains
	Glacial acetic acid	15 minims
	Formic acid	5 ,,
	Water	1 ounce
	Alcohol	*quantum suff.*
No. 2.—	Ferri protosulph	50 grains
	Glacial acetic acid	25 minims
	Formic acid	10 ,,
	Water	1 ounce
	Alcohol	*quantum suff.*

Re-developer.

Pyrogallic acid	2 grains
Citric acid	1½ ,,
Water	1 ounce
Alcohol	a little.
Nitrate of silver	30 grains
Water	1 ounce.

Fixer.

Cyanide of potassium	10 grains
Water	1 ounce.

I find, in practice, by having the iron developer of two different strengths, as above mentioned, I can mix them very readily to suit the subject, and I am a great advocate for the use of formic acid. As regards exposure, I am very careful not to under-expose. I like to see every particle of detail come out with the iron developer easily. If the plate is the least under-exposed it is impossible to get any aerial effect or softness, and if you force the development you get nothing but a cold and harsh result. I think most photographers err in this one point (under-exposure). I know it is very much easier to develop a plate that is slightly under-exposed than one that has had the full exposure, or a little more. The under-exposed plate will be free from stains and markings, and will develop more slowly; whereas in the one that has been fully exposed the development is very rapid; and this is the only way I am able to gain anything approaching to softness and aerial effect. I find in hot weather it is very difficult at times to develop a plate, so fully exposed, free from stains, but with patience and perseverance it can be done; but at the commencement cleanliness must be the motto.

I thank Mr. Burgess very cordially for his remarks about my pictures being hung so low at the Exhibition in Conduit Street. I must say they were too low to be seen to advantage. Next year, if we have another exhibition, I hope to have a better place for my productions. Some must be hung low, and this year I must look at it in that light. I know, myself, from past experience, it is not a satisfactory job to hang so many different sizes; but, on the whole, I think the exhibition reflected great credit on the committee, secretary, and all connected with it.

Correspondence.

ENLARGEMENTS BY THE MAGIC LANTERN.

Dear Sir,—Having taken advantage of this festive season to bid adieu to home and my general routine of labour for a short time, I have been enabled to look in upon several of my photographic friends residing in various towns in the south of Devon, and am sorry to find so little business stirring, and so little novelty afloat; enlargements alone seem to advance in popularity, therefore Dr. Monckhoven's apparatus will no doubt be found welcome by those who can afford it.

I have lately received many letters asking for assistance and advice on the use and appliance of the magic lantern for the purpose of producing enlargements. Were your readers to look closer into the principle upon which Dr. Monckhoven's and various other enlarging apparatus are constructed, they would perceive that they are, in fact, nothing more than magic lanterns, having suitable appliances for a special purpose, which could be fitted to any lantern body if required. Let us take the drawing given in your issue of the 17th inst., dissect it, and see how far I am right.

First, then, the polished oak case, with its chimney, the case containing the hydro-oxygen lighting apparatus; what else is it but a magic lantern body slightly altered in shape, the lighting apparatus the very same in principle that has been used for years past in the lantern, its only novelty being the shape of the burners, the grand improvement being the introduction of the magnesia cylinder? But this can be used also in the common lantern. Then come the condensors and the nozzle, comprising the holder and tubes containing the object-glasses; here, again, are the same things, only under other forms. Any ingenious mechanic, under the direction of a practical photographer who knows the arrangements necessary, would be enabled to make a nozzle to a good lantern, or, rather, to a good set of lenses, of sufficient size to answer every purpose required; in fact, lanterns might be so arranged as to be sold with an extra front, made especially for this purpose. Of course the size of the negative to be enlarged would regulate the size of the condensors to be purchased; but the former need not be so large as a carte-de-visite; in fact, if we are to believe what has been published in the journals concerning the suitability of small pictures for such purposes, it will be found that those of one inch square can be enlarged to any moderate size. For a proof of this see "The Poor Man's Photography at the Great Pyramid," by C. Piazzi Smyth, as given in the Photographic News. Should this prove to be correct in practice, the size of the condensors need not be larger than those usually made to good lanterns; at any rate, four inches in diameter would be ample for ninth-sized negatives; and in case of C.D.V. vignettes, arrangements would be made so as only to present that portion of them before the condensor as might be required to be reproduced, which is frequently not more than one-half of the entire surface of the negative.

It will thus appear that the enlarging apparatus and magic lantern are synonymous in principle, the *sine qua non* in both being first-rate lenses, and a powerfully actinic and brilliant light.

Your readers will easily imagine that it would be useless to place spectacles, however well made, before the eyes of a man stone blind.

I consider the hydro-oxygen light, with its recent improvements, the most preferable, and if the retort (in the defects of the form of which, and the impurity of the oxide of manganese, lie the danger), are fit for the purpose, there will be no risk of accidents; but should a fear of such deter anyone from using the gases, there is the magnesium lamp that can be applied to the same purpose.

A friend of mine, living not far from where I now write, has produced some very first-rate pictures, his enlarging apparatus being only a magic lantern. This is placed in a common moderate-sized packing-case, the nozzle projecting through a hole in one end of the case, the other end being removed, and so placed as to be connected with the open air: an open space in any room window would do. The paper on which the enlargement is made is fixed upon a board hung upon the opposite wall. A Solomon's magnesium lamp, properly arranged, furnishes the light; the smoke of the burning magnesium, being confined to the inside of the case, and thence escaping into the open air, does not cause any inconvenience whatever in the room. It must not, however, be forgotten that a well-fitting door must be made in the side of the case, so that the lamp can be got at to arrange it and set it in action, and then kept close whilst the magnesium is burning.

Your querist, "Magic Lantern," will perceive, upon reading Dr. Monckhoven's article, supplemented by what I have here written, that he cannot hope to obtain enlargements with any light so non-actinic as that given by paraffine or other hydro-carbon oils.

Although fearful of making this article too lengthy, I beg leave to add, that it would be better that all oxide of manganese to be used for the purpose of making oxygen gas should be first submitted to a strong heat in a covered crucible, as, by thus acting, its exemption from danger of explosion would be ensured; and that an iron tube be fixed on the top of all retorts, to receive a cork—or, better still, that a valve of simple construction be added to them, so arranged as to act upon a certain pressure from within; and lastly, that all purifiers should invariably be made of glass, like a Wolf's bottle, as, thus, the operator is enabled to see instantly any approach of too rapid a formation of gas, and timely withdraw the retort from the fire; and, if the stopper of the bottle is not too tightly fixed into its neck, this also will, on occasion, act as a safety valve J. Martin.

114, *High Street, Ilfracombe.*

BLEACHED LAC IN VARNISHES.

Sir,—I wish to caution your readers against using bleached lac in varnish making, as I think it the cause of cracking of the film. Being bleached with chlorine, it attracts moisture from the atmosphere, and causes an expansion of the film, and, consequently, cracking.

Any one using the receipt given in your impression of the 24th ult. will, in less than twelve months from the time of varnishing his plate, find out his mistake. I have tried it, and find a few drachms in twelve or fourteen ounces of varnish, made with it and other gums, to utterly spoil the negatives varnished with it.

I am trying experiments with various gums in varnish making, and hope, at some future time, to give photographers the result of my experiments. Unbleached lac would be found better, there being no objection to it but the colour. A. WHITHAM.

Hollingworth Lake, by Manchester.

[Our personal conviction is decidedly in conformity with that of our correspondent.—ED.]

HOT WATER PIPES IN STUDIOS.

SIR,—For the benefit of "W. L. B." in your correspondents column of December 31st, I beg to state that my hot water pipes are two and a-half inch cast iron; *i.e.*, two and a-half inch hole through, and two rows of pipes, one row above the other. The hot water runs through the top row of pipes, and the cooler water (not cold, for it never gets cold) runs through the bottom row of pipes. The pipes run through the dressing-room, the dark room, the chemical and colouring room, and round three sides of the gallery, and turn back with a blank end or elbow. They are very effective. I can put the place up to 80°, or keep it at any lower temperature. The stove is one of the tall or upright ones, fed at the top, and will go for twenty-four hours after being filled. Cost of fuel, about fourpence. Cost of apparatus, under thirty pounds altogether. Nearly three hundred feet of piping. The stove stands in an outhouse in the back yard.—Very truly yours, A. WHITHAM.

Hollingworth Lake, by Manchester.

PS.—I forgot to say that the waiting room is kept warm as well, though the pipes do not go through it.

ROWSELL'S GRAPHOSCOPE.

SIR,—I ask space for a few lines in connection with the graphoscope.

About three years since I took out a provisional patent for my invention of this instrument. I have borne the usual trouble, anxiety, and cost attendant upon the introduction of any novelty. At length, however, the instrument has made its way, and attained a large circulation, and as I have among its buyers such houses as Messrs. Marion and Co., Negretti and Zambra, the London Stereoscopic Company, Murray and Heath, and others, I need not say more on this head.

Some months since I found it desirable, from increasing demand, to add to my makers of the cabinet work portion of the instrument (always reserving under my own care the lenses), and applied to an individual in the trade. The workmanship, however, did not prove sufficiently good for me, and I discontinued my orders. I, of course, gave this individual my instruments in fair confidence, and all necessary particulars. Now I notice—need I say with what surprise?—that in your advertising columns, is this same maker's announcement of my instrument, using precisely the same name,* and, moreover, copying literally, word for word, the terms of description of my trade circular as to its qualities, &c.

I could use strong terms of comment, but I content myself with asking, is this honest? Or, to use a milder term, is this fair?

As the advertisement in question is addressed to the trade, I ask of them, at the same time, the favour of attention to this simple statement of facts, and remain your obedient servant, C. J. ROWSELL.

35, *Walbrook, E.C.*

DR. MONCKHOVEN'S REPLY TO MR. THOMAS BARRETT.

MY DEAR SIR,—The method indicated by Mr. Barrett, to employ the camera and the wet collodion process for the reproduction of negatives, in order to obtain a perfectly clean positive by transparence, is that hitherto in general use. But, inasmuch as the lens employed has not an absolutely flat field, and the focussing, although carefully managed, is never perfectly accurate, a little of the original sharpness of the negative must invariably be lost. Moreover, a positive upon wet collodion never possesses that perfect transparency inherent to the method described by me,* in which the collodio-chloride and albumen are used. Do the views of Ferrier lack sharpness? And yet they were obtained by contact; indeed, as the result of many experiments, conducted with much care, I would assert that the method described by Mr. Barrett would never be capable of producing by transparency positives such as recently exhibited at the Photographic Society of London.

As to the second question raised by Mr. Barrett, viz, whether the structure of the collodion does not become visible, I reply that the same occurs only with bad collodion. I have enlarged negatives up to twenty diameters without having observed the structure referred to.

It is very probable that Mr. Barrett has never seen the enlargements that I exhibited at Paris some years back, and which, I believe, are still in the possession of Mr. Dallmeyer and Mr. Ross. When he has inspected these, he will, I think, change his opinion.—Believe me, Mr. Editor, yours truly, D. V. MONCKHOVEN.

Paris, 1st January, 1870.

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Proceedings of Societies.

AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE adjourned Council meeting of this Society for awarding the prizes was held Thursday, the 23rd inst., Col. the Hon. D. F. DE ROS in the chair.

The minutes of the last meeting having been read and confirmed, T. Sopwith, Esq., M.A., F R.S., &c., having been proposed by Mr. Glaisher, and seconded by Dr. Arthur Farre, was elected a member of the Council in place of Sir Thomas Maryon Wilson, deceased.

Mr. GLAISHER then laid before the meeting a report upon the Society's pictures for the year 1869-70, in accordance with a request made to him at the previous meeting. After mentioning the gratification which he felt in noticing the steady progress of photography as represented by the Amateur Photographic Association, and the ever increasing improvement in the pictures contributed by the members each season, an advance more decided and striking this time than in any proceeding years, he proceeded as follows: The pictures for this year have been divided, as usual into six classes: Class 1 contains 107 pictures; Class 2 contains 118 pictures; Class 3 contains 231 pictures; Class 4 contains 222 pictures; Classes 5 and 6 contain the remainder of the pictures.

The following prizes were awarded by the Council: First prize, Capt. G. Bankart, for Nos. 140, 153, and 164, a large silver goblet; Capt. G. Bankart, for Nos. 142 and 161, a silver goblet; W. Baily, Esq., for Nos. 11, 13, and 17, a silver mounted claret jug; W. D. Howard, Esq., for Nos. 149, 154, 156, and 157, a silver mounted claret jug; E. R. Hall, Esq., for No. 9, a silver goblet; F. S. Schwabe, Esq., for Nos. 15 and 16, a silver mounted claret jug; J. Clark, Esq., for Nos. 49 and 82, a silver mounted claret jug; Major E. C. Impey, for Nos. 4 and 8, a silver goblet; Capt. W. Foster, for Nos. 57 and 61, a silver mounted claret jug; F. E. Currey, Esq., for Nos. 46 and 51, a silver goblet; T. Brownrigg, Esq., for No. 20, a large album elegantly bound in morocco, with silver name-plate; Sir J. J. Coghill, for Nos. 83 and 89, a large album elegantly bound in morocco, with silver name-plate; J. W. Richardson, Esq., for Nos. 57 and 61, a large album elegantly bound in morocco; Capt. H. E. White, for Nos. 6 and 19, an album elegantly bound in morocco; W. S. T. Sinclair, Esq., for No. 30, an album elegantly bound in morocco; F. P. Barlow, Esq., jun., for No. 112, an album elegantly bound in morocco; M. Allport, Esq., for No. 30, an album elegantly bound in morocco.

Dry Plate Prizes.

F. Beasley, Esq., jun., for Nos. 112 and 114, a silver mounted claret jug; W. H. Price, Esq., for Nos. 26 and 27, a large album elegantly bound in morocco; R. Murray, Esq., for No. 29, an album elegantly bound in morocco.

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* The name of GRAPHOSCOPE was suggested to me by Dr H. Brown, Head Master of Charterhouse School, and I patented it accordingly under title of the Patent Graphoscope, the two Greek words *grapho* and *scopo* forming the single combined word, and which I have registered.

* See my article in the YEAR-BOOK OF PHOTOGRAPHY, 1870.

Certificates of Honourable Mention were awarded to the following Members:—

B. Green, Esq.; W. L. Banks, Esq.; T. Higgins, Esq.; F. H. Tanner, Esq.; R. C. Walker, Esq.; Capt. G. F. Smith; J. H. Ravenshaw, Esq.; D. Pudumgee, Esq.; A. R. Hunt, Esq; F. H. Lloyd, Esq.; C. Stephen, Esq.; R. B. Bowman, Esq.; T. Samuels, Esq.; Dr. Horace Day; Col. Holder; A. Booty, Esq.; Rev. J. Freke.

Besides the prize pictures above enumerated were several others for which the Council would gladly have awarded prizes, but that they had already considerably exceeded the amount stated in the rules of the Association, amongst which may be mentioned a pantoscopic picture by Mr. Samuels, No. 15; an interior by Dr. Hemphill, No. 104, and several microscopic enlargements by Mr. Higgin.

An unanimous feeling of satisfaction was expressed at Mr. Melhuish's general management, and at his superintendence and care in the printing of so large a number of pictures.

A vote of thanks was passed at the meeting to Mr. Glaisher for the very great amount of time which he had given to the examination and arrangement of the pictures, and for his accurate and interesting report.

A. J. Melhuish, Hon. Sec.

Talk in the Studio.

Photography in America.—Our readers will learn with satisfaction that, in addition to information which we have given, from time to time, of the progress of photography in America, we have made specific arrangements with Mr. E. L. Wilson, Editor of the *Philadelphia Photographer*, to send us a fortnightly letter, detailing all improvements, inventions, and other matters of interest in our art. As America has always been especially prolific in ingenious invention in connection with photography, and Mr. Wilson stands in a position, as Editor of the principal American journal, of obtaining full and early intelligence, our readers will, we hope, gain considerably by the arrangement. Dr. Vogel will continue to furnish us with regular information as to photographic progress in Germany, and various occasional contributors have promised to keep our readers informed of progress in various parts of the Continent.

Keeping Qualities of Gum Plates.—A correspondent, "W. J. A. G.," sends a couple of prints from negatives taken on gum plates which were prepared in July last, and exposed a few days ago. The negatives are evidently clean and brilliant, and afford satisfactory evidence that the plates will keep without spoiling. It would be interesting to test some of the plates on the score of sensitiveness before and after keeping, in order to ascertain in what degree the plates suffer in this respect.

Photographing Birds in Landscapes.—An "Old Photographer" sends the following suggestions for photographing birds, &c., in landscapes. He says:—"The following appears to me probable and feasible:—Operation 1. Paint the birds vividly on a ground perfectly inert, or as nearly so as possible. They might be cut out in white cardboard, drawn, shaded, and stuck on black velvet. 2. Take a negative of the birds on glass the size of intended landscape (exposure rapid, to ensure bare glass), and finish in the usual way. Make the birds opaque. This is a mask negative. 3. The plate for the landscape being ready, expose it (very shortly) to the painted birds. 4. Then put the mask negative in front, and expose again for the landscape. Develop, &c. The 'registration,' &c., would present no difficulty to skilful operators."

Alleged Poisoning with Iodide of Potassium.—A shocking case of accidental poisoning is stated to have occurred at Newcastle-under-Lyme on Friday evening. Mr. M'Nish, Governor of Stoke-on-Trent Workhouse, took a draught of a liquid poured from a bottle, and supposed to be gin, and spluttering out upon the floor all he had not swallowed, asked if poison had been given him. It was then discovered that the bottle contained not gin, but iodide of potassium. In a state of convulsion he was led to a sofa, a doctor was sent for, and strong remedies were applied for the ejection of the poison. This was effected, but the retching was so violent as to produce exhaustion, which ended in death an hour afterwards. It appears that a friend, who is an amateur photographer, had, just before the removal from the workhouse, photographed as *souvenirs* the governor and his family and different parts of the establishment, and by some mistake had left at the workhouse a bottle of iodide of potassium, which, in the hurry of removal, became mixed up with some bottles belonging to Mr. M'Nish, and was supposed by Mrs. M'Nish to contain gin. The bottle was not labelled, and no examination of its contents had been made. The unfortunate man was fifty-six years of age, but of infirm health. If he had been a younger or a stronger man, it is probable he would have recovered from the effects of the poison, as he succeeded in vomiting the whole of it, though exhausted by the effort.

Lectures on Light.—We find in the American papers reports of an interesting series of lectures on light at the Peabody Institute, Baltimore, in the course of which the experimental illustrations appear to have been singularly beautiful and successful. We hope shortly to have space for some extracts.

Photo-Engraving in Australia.—We learn, from the *Illustrated Australian News*, that a process for etching on metals by the medium of photography has been discovered by a Melbourne photographer. The matter, however, is kept as secret as possible, with a view of securing patents simultaneously in Europe and America. It is believed that the discovery, if it is what it is represented as being, will cause a revolution in the engraver's art.

To Correspondents.

*** The Title Page and Preface to our Last Volume, consisting of four extra pages, are given with the present number.

The Year-Book of Photography for 1870 is now ready, and contains the largest amount of matter and the greatest number of original contributions of any yet issued.

Our New Volume.—We thank many correspondents for kindly seasonable greetings, which we heartily reciprocate, and for complimentary expressions of approval of our work as hitherto done. In issuing a new volume, we have simply to say that we shall bate nothing of the effort which has won approval in the past, and neglect no opportunity of adding thereto anything which we believe may give increased efficiency in the future. Some examples of new processes are in preparation, and will shortly be presented to our readers; and in addition to the fullest information in relation to matters of current interest, our pages will contain various series of practical articles now in preparation. Contributions may be expected during the year from the pens of Mons. Adam-Salomon, Mr. Bedford, Mr. Mudd, Mr. Robinson, Mr. Mayall, Mr. Hughes, Mr. Blanchard, "Protagoras," Mr. England, Mr. R. Manners Gordon, Dr. Anthony, Dr. Monckhoven, Dr. Vogel, Dr. Liesegang, Mr. E. L. Wilson (of Philadelphia), Col. Stuart Wortley, Mr. Rejlander, Mr. Bovey, Mr. Blair, Mr. Cherrill, Dr. Phipson, Lieut. Noverre, Dr. Diamond, Mr. Vernon Heath, Mr. W. H. Davies, Mr. Fry, Mr. Tunny, Mr. J. R. Johnson, Herr Grune, Mr. B. J. Edwards, Mr. Dallmeyer, Mr. Maylaud, Mr. Eastham, M. de Constant, Mr. F. R. Window, Mr. H. B. Pritchard, Mr. Spiller, Mr. Butter, Mr. Griggs, Mr. Swan, Mr. Woodbury, Mr. Werge, Professor Morton, Mr. B. Wyles, Mr. Wardley, Mr. Burgess, Mr. Slingsby, Mr. Arthur Taylor, Mr. Carbutt, "Lux Graphicus," "Respice Finem," the "Old Photographer," Mr. Cocking, Mr. Paget, Mr. Pierce, Mr. Duncan, Mr. Gulliver, Mr. J. Martin, Mr. A. Hughes, Mr. Croughton, "Ennol," Mr. Lothian, and other gentlemen whose attainments in art and science or experience in photography give value to the contributions.

E. S. L. (Dublin).—Mr. Henderson, of King William Street, produces the best enamel photographs we have seen in this country; but how far he is prepared to teach his process you can only learn by direct communication with him. Mr. Solomon, of Red Lion Square, is, at the present time, giving instructions in producing enamels.

G. R. Gill.—The mode of enlarging upon canvas to which you refer is that of Mr. Charles Waldack. The painted surface of the canvas is cleaned with alcohol, and a salting solution, prepared as follows, applied with a brush :—

Gelatine	200 grains
Iodide of potas.	400 ,,
Bromide of potas.	100 ,,
Chloride of ammon.	100 ,,
Water	80 ounces

It is dried, and a silver solution containing thirty grains of nitrate, sixty minims of Beaufoy's acetic acid to each ounce, applied to the surface by flowing, the canvas being formed into a dish for the purpose. It is exposed until a slight image is visible, and then developed with a saturated solution of gallic acid. In our Year-Book, just out, you will find two or three methods of printing on canvas, and more than one method of enlargement, described.

W. W.—You are confounding in your mind two very distinct things : the ammonia-nitrate bath, and the nitrate bath to which nitrate of ammonia has been added. If you read the remarks carefully in the 1861 Year-Book, to which you refer, you would have found that the ammonia-nitrate bath there referred to is altogether different to the bath which you contemplate making. The ammonia-nitrate bath practically consists of oxide of silver dissolved in a solution of ammonia, and such a bath is very apt to dissolve the albumen unless the floating be brief. In the bath you contemplate you simply dissolve the two nitrates in water. The nitrate of ammonia will check rather than facilitate the dissolving of the albumen, and the floating on such a bath as you propose should be for about three minutes. 2. A forty-grain bath will, with most commercial samples of paper, answer quite well. Strong baths are only necessary with highly-salted papers, and, in such case, greater rapidity in printing is obtained. 3. The solution will be neutral unless, as is often the case, the sample of nitrate of silver is acid. 4. Experience, of course, is the only safe guide in points of manipulation, but you may easily decide as to the point of dryness. The paper must be so dry as to have no feeling of moisture or dampness, but it must not be so dry that it curls unmanageably, and crackles when handled. 5. You may use a fixing bath for negatives as strong as you like, one ounce of hypo in two or three ounces of water. 6. We generally use the simple protosulphate of iron, without copper or other substance except sugar and a little acetic acid. 7. In urging that the hypo bath should be neutral, the point to be enforced is that it should not, under any circumstances, be acid. With the carbonate of ammonia it is, of course, alkaline.

J. F. (Clifton).—Mr. Hubbard's address is No. 1, Oxford Street, and we have no doubt that he will be happy to supply copies of "Stolen Moments." The price is, we believe, three guineas for each copy, not half a guinea.

Devon.—An extension of the boarding, so as to form a hood in front, would improve matters somewhat ; but the chief difficulty you will have consists in the mass of front and front top light which will reach the sitter, which, in many cases, will be troublesome. Possibly you may be able to extend an awning some distance in front, which may be useful. As you have not space for a larger studio, in which to make permanent arrangements for a suitable balance of light and shade, you may possibly be able to secure a satisfactory result by means of movable screens and curtains.

A. M.—Your general plan and proportions are excellent ; the only point in which modification is desirable is the height of eaves and ridge. If you must not build the ridge higher than thirteen feet, it will be well to have the eaves a foot or more lower, otherwise you will scarcely have pitch enough to throw off the rain rapidly and satisfactorily. With a room fifteen feet wide, thirteen feet at the ridge, and nine and a-half feet at the eaves, you will have a very flat roof, from which water, flowing slowly, will find its way inside.

W. J. A. G.—Landscape backgrounds are generally painted in distemper, in precisely the same manner as scene-painting. The colours are obtained in dry powder, and mixed with size, or a dilute solution of glue. The design is produced in shades of grey or brown, the pigments used being whitening and lampblack, or whitening and Vandyke brown. The clouds should be painted on the canvas in the usual manner. A simple manner of producing such a background consists in covering the canvas with a large sheet of brown paper, and sketching the design in black and white chalk, softening them with a stump. We have seen some good results so produced. The exhibition was a very instructive one. Thanks for prints sent ; they afford satisfactory evidence of the keeping properties of the plates.

X. Y. Z.—It is well, undoubtedly, as you remark, to work through difficulties, as much as possible, by personal effort ; at the same time you need not feel any hesitation in asking our aid or counsel, as we have always pleasure in aiding earnest students, and a hint may sometimes save you much labour and perplexity. The formulæ and manipulations you describe are all excellent, and well calculated to give you good results. The cause of your pinholes was simply the accumulation in the nitrate baths of excess of soda-nitrate of silver, from the iodide dissolved out of films during long use. The plan of cure you adopted was right, and, as you found, answered.

Canvas.—You will find two or three methods of painting on canvas in our Year-Book, just out. Mr. Davies' process, described by Mr. Lothian, has produced some admirable results, which we have seen. To make it suitable for solar or artificial light enlargements, iodide and bromide should be employed instead of chloride. Take the proportions of iodide and bromide suggested by Dr. Monckhoven, and employ the lac and gelatine solution as the vehicle. Such a method will, we believe, give you excellent results on canvas.

O. J. Otto.—The parcel was duly received and acknowledged. Many thanks. We will write to you soon.

Ignoramus.—The "ammonia-nitrate bath" is a term used to describe a solution of oxide of silver in ammonia or nitrate of ammonia. A silver bath of the proper strength (say 50 grains) is prepared, and liquid ammonia is carefully added, a little at a time. The first result is the gradual reduction of all the silver as a dark oxide ; by the continued addition of ammonia the oxide is redissolved, and, when sufficient has been added to make the solution clear, the ammonia-nitrate bath is ready for floating paper on. As a rule, it is unsuitable for albuminized paper without further treatment.

R. Hammond.—The dimensions of your proposed studio will do well. If you can have an uninterrupted north-side light, build it to stand east and west, so as to get the principal light from the north. The south side and roof, and each end, may be then opaque ; the north side and roof all glass, except about six feet at each end opaque. You can then use either end of the room, and so light which side of the face you choose. The lens you name is good, but the No. 2 of the same series, by the same maker, is better.

J. C. Brown, M.A.—The paper matts or masks for placing between two glass transparencies, in mounting, can be obtained, we should think, of photographic dealers ; but we cannot with certainty say. Can any of our readers inform us?

Thomas Lewis.—The mode of enlarging from small negatives on porcelain is precisely the same as that used in producing photo-crayons or images on collodion for transfer to paper, in relation to which you will find various articles in our last and recent volumes. An enlarged transparency on wet collodion is obtained in the camera, and this, when properly toned, gives a fine picture by reflected light. The details are too lengthy for this column, so we must refer you to the various articles. You will also find an article in our Year-Book, just issued, especially on this subject of producing the images on porcelain. You will find it difficult to obtain porcelain tablets of large size, but probably opal glass will answer your purpose. You can obtain it of Claudet and Houghton, and most dealers.

J. Terras.—Thanks for the circular. It is a great pity. 2. We cannot with certainty recommend the lenses you name. You may possibly get a good one, but to obtain certainty of excellence you must pay a higher sum. For cabinet portraits you should have a lens of nine or ten inches equivalent focus.

Hartington.—We regret that we cannot form the slightest idea of the constant recurrence of a "broad dark halo on the forehead and background" of your photo-crayons. We are not sure that we understand what you mean by a "dark halo." Is it a stain caused by deposit of silver, or an insensitive patch? We have never met with anything which answers to the description.

Undated Letters.—Some of the letters answered this week we have reason to believe were received two or three weeks ago, but, being without dates, had been placed amongst a batch of answered letters. When a letter is without a date it sometimes gives us a little trouble to ascertain whether it has received attention or not ; and as we receive, and answer in some way, an average of at least sixty letters weekly, our correspondents will see that it is desirable to assist us to an orderly arrangement by dating their letters. At any time when an answer is not received we shall be glad if correspondents will write again, as we never wilfully neglect to answer a letter, but occasional postal and other miscarriages will occur.

Received.—*The Sun*, by Amedee Guillemin, translated by Dr. Phipson.

Several Reviews, *Echoes of the Month*, and articles by Mr. Blair, Herr Grune, Mr. Gulliver, and others are compelled to stand over until our next.

Several Correspondents in our next.

All Communications for the Editor to be addressed to 15, Gough Square, Fleet Street, London, E.C.

THE PHOTOGRAPHIC NEWS.

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Vol. XIV. No. 593.—*January* 14, 1870.

CONTENTS.

PAGE
ide Light or Front Light.......... 13
Minor Applications of Photography 14
Echoes of the Month. By an Old Photographer 14
Experiences of an Experimentalist. By Wilhelm Grune.......... 16
Acceleration of Exposures. By Wm. Blair 17
Wet and Dry Plate Process United. By T. Gulliver 18
The Chloro-Bromide Process. By M. Carey Lea 18
Prints and their Production. By S. T. Davenport.......... 20

PAGE
Correspondence.—Mr. Robinson's Golden Syrup Solution for Preserving Wet Plates—Rowsell s Graphoscope—Use o fthe Solar Microscope in Photography—The Conduit Street Exhibition—Cleaning Plates—Transparencies for Producing Enlarged Negatives—Incentives to Progress—Enlargements by the Magic Lantern and Paraffine Lamp.......... 21
Proceedings of Societies.—Bristol Photographic Sociey—Photographic Society of London 22
Talk in the Studio 23
To Correspondents.......... 24

SIDE LIGHT OR FRONT LIGHT.

The question as to the best mode of lighting the sitter must constantly recur as one of the most interesting which can engage the attention of photographers, inasmuch as light and shadow are not only the chief elements of pictorial effect at the photographer's service, but are also of vital importance in securing true likeness as well as pleasing portraiture. The great difficulty in writing or talking about the subject arises from the fact that it is almost impossible to discuss it in the abstract. It is a practical question, which it is much easier for a man to state his experience upon than to make clear by argument.

The members of the recently formed Bristol Society have had, in the course of the last few weeks, two able papers on the subject of glass houses and lighting; the first by our ingenious contributor who is known by his pseudonym of "Ennel," and the second by Mr. Gillo, whose excellent contributions to the recent exhibition give interest to his dicta. The paper of "Ennel" was clever, but in many respects, we venture to affirm, misleading, advocating, as it did, "front light," by which is commonly understood light directly in front of the sitter and behind the camera, as the dominant light; but he admits, at the same time, that he requires more light on one side than the other, by which admission he at once concedes that a dominant side-light is required. The facts quoted show how important it is in all discussions to begin by defining terms. In a certain sense, all the light used in portraiture is front light, inasmuch as it is in advance of the sitter; but the light which is at the side of the sitter, as well as in advance of him, is spoken of as side-light, because it derives its essential value from being at the side, crossing over the face instead of striking it full in front, lighting up the salient features, which acquire relief and vigour by being defined against those parts which, escaping the touch of the dominant light, are left more or less in shadow. The direct front light, on the contrary, falls on every part of the face with equal force, and the only indication of form, gradation, and modelling are obtained by the slight recession from the light of the retiring parts of the face, and the inevitable tendency is to flatness in the delineation. By throwing a flood of light on a globe directly in front, it may be made to look like a disc, and direct front light has tendency to flatten into a disc-like effect many faces in portraiture. "Ennel" states that he would have more light on one side than the other. We answer, that in proportion as the front light is the dominant light, the tendency will be in the direction of flatness; and the recommendation of front light at all tends to mislead, as, in proportion as it obtains attention, it may induce some to introduce direct front light in their studios, and such light, as a rule, we regard—both theoretically and from practical experience and observation—as troublesome and injurious.

The common experience of the best photographers has determined that a high side-light, at a variable position in advance of the sitter, is the easiest to manage, and gives the most satisfactory results. It may be of a little interest to some of our readers to know that excellent authorities, in relation to pictorial art, have determined that such a mode of lighting is most effective and pleasing, and have directed its use long before photography, as an art, was in existence. Frank Howard, in his clever "Whole Art of Picture Making," says:—

"The light should never be directly in front of the picture, or object chosen for the picture, that is to say, coming in over the head of the spectator from behind him. If the subject be a flat object, such as the side of a tower, it will present a mass of equal light, or a spot. If the object approach the circular form, as a round tower or tree, the light will graduate equally from the centre to the two equally dark sides. The outline of the two sides of the tower, and throughout of the tree, will be of uniform degrees of dark, and all pictorial effect in danger of being lost."

The same author, in a chapter on the treatment of heads, in another work on "Imitative Art, or the Means of Representing the Pictorial Appearances of Objects," says:—

"If a head is to be represented, it should be treated in a similar manner to be a globe, and should receive the light on that side which will afford the greatest breadth.

"On what is technically termed a three-quarter view of the head, the brightest light will be upon the forehead, cheek-bone, and nose, from whence it should graduate to the retiring side and the chin. The brow will receive light in proportion to its prominence, and under it will be perceived a shadow strongest between the eye and the nose. The light will again glance upon the cheek-bone, graduating up to the hollow under the eye, and down to form the oval of the cheek. A light will run down the line of the nose, glance upon the point of the upper and the fullness of the under lip, and faintly touch the prominent part of the chin. . . .

"The retiring side of the head graduates into shadow, slightly relieved by half-lights upon the eye, the brightness of which will depend, as in the other, upon the prominence of the eye, or the heaviness of the lip, but must not be equal to the light upon the nearest eye. . . .

"If a head be seen in front, the same assimilation to the effect of a globe should be preserved; the principal light being on one side of the forehead, cheek, and nose, and graduating from thence diagonally to the other cheek and chin. The treatment of the various parts will be nearly the same as the view just described, the difference being principally in the outlines of the several forms.

"A profile will be made most intelligible by introducing the light rather behind the head, so as to throw the receding boundaries of the front of the forehead, eyes, cheek, nose, and chin into a half-tint. The principal lights will be on the upper parts of the temples, the cheek-bone, and the ear; and the principal shadows under the hair, upon the cheek and temples, and under the eyebrow, close to the nose. The whole of the front of the iris of the eye will be light, except close under the eyelashes. The pupil of the eye will be scarcely visible, but the eyeball will appear darkest where the pupil is known to be."

This kind of treatment of ordinary forms of portraiture is, there can scarcely be a doubt, calculated to give the best result pictorially, and not less the best result in point of likeness because it presents faces in the aspect in which they are most commonly seen by friends, lit up by the light from the upper part of a window in an ordinary sitting room. Mr. Gillo happily points out the *juste milieu* when he suggests that the light must come sufficiently from the side to give vigour as it strikes across the features, and be sufficiently in advance to avoid harshness. A high side light, the direction of which, by curtains, can be varied to suit different classes of faces, will give, we believe, the most satisfactory results, and with the least trouble, and the shortest exposure, as the whole of such a light reaching the model is doing pictorial work.

We feel it necessary to protest against misleading doctrines on the subject of lighting the studio, because they sometimes lead to costly as well as fatal errors, as Mr. Wyles, in his article on the subject in our Year-Book, just issued, well points out. In many cases a young photographer's chief capital is involved in the building of his studio, and if this be done on radically erroneous principles, hope, time, and money are sadly wasted.

Whilst referring to the subject of lighting, there is another point to which we may refer, upon which some confusion of ideas seems occasionally to exist. Some photographers are in the habit of speaking of lofty or low built studios as materially affecting lighting, and referring to placing the model near the window or far from it as securing upon it a brilliant or a soft light. The fact to which they refer is clear enough, but the cause of the fact appears to be frequently mistaken. The window is referred to as the source of light, and the brilliancy of the light from that source is regarded as diminishing in the ratio of the square of the distance from the source. Now it should be remembered that the window is not the source of light. The source of the light with which the photographer works is practically the mass of diffused or reflected light from the sky and clouds; and the removing of the model a few feet nearer to or further from the source of light would not make a perceptible difference in the lighting. The reason why the model is more brilliantly lighted by being brought nearer the window or aperture through which light is admitted, is simply because the nearer the aperture the greater the amount of light falling on it, the expanse of sky from which light reaches it being so much the greater; and the further it is removed from the window, the more the area of sky from which light can reach it is contrasted. In short, by removing the model further away from the window the angular aperture is contracted, the fewer the number of rays reaching the model, and, consequently, the less brilliant the illumination. The same effect precisely would be obtained if, instead of placing the sitter further away from the window, the aperture or size of the window were reduced. It is not because of any absorption of light in any appreciable degree, not because it has become diminished in proportion as it receded from its source, that an object far from the window is less vividly illuminated than one close to the window; not because the rays have been absorbed or diminished in power, but simply because the source of light has been diminished in area, and, consequently, the number of rays reaching the model diminished in number. Of course, in these remarks, we are dealing with the simple idea of a room with one aperture or window, either at top or side, to admit light; in proportion as the apertures are multiplied the calculation would become complicated, but the principle would remain the same.

MINOR APPLICATIONS OF PHOTOGRAPHY.

At the meeting of the Photographic Society, on Tuesday evening, Mr. Baden Pritchard called the attention of members to some minor applications of photography, as affording valuable opportunity for professional enterprize, which are worthy of attention, especially as the suggestions were accompanied by capital examples of the work proposed. We will allow Mr. Pritchard to speak for himself, in the following summary of his remarks.

He was of opinion, he said, that sufficient attention was not given to this subject; although it was difficult, perhaps, to point to applications sufficiently important to warrant special attention, still there existed many ways in which photography might be made useful, especially in connection with fancy articles. The application to which he desired more especially to call attention on the present occasion was indeed a trifling one, but, nevertheless, perhaps worthy of a few words; it was that of affixing small medallion portraits to note paper.

It has lately become the fashion to have one's monogram or address neatly designed as a heading to note paper, a practice now almost universally adopted, and for this little design of use and ornament, considerable prices are not unfrequently paid. If, besides the monogram, a little oval design were lithographed in one or more tints upon the letter, and a small portrait of the writer placed thereon, a pleasing and appropriate heading would thus be produced, which could hardly fail to become popular, provided the cost were not exorbitant. With regard to the expense of these portraits, Mr. Pritchard was of opinion that they might be printed at a cost of five shillings per thousand, not taking into consideration the question of labour and profit, or original cost of the negative. Any one possessed of a moveable back to the camera, similar to the diamond camera arrangement, could take five portraits in a space of four inches by three, and these, printed on any waste scraps of paper, without masking, gummed at the back, and stamped out, are then mounted upon the paper, which has previously been lithographed. Photographers would, doubtless, be able to sell five quires of paper of this description at the prices usually paid for a dozen cartes-de-visite, viz., a guinea, or even half a guinea. Note paper thus adorned endows a letter with a certain amount of individuality, as in reading the lines one always has the writer before one's eyes.

The examples of the note paper portraits shown were very good. Besides these, he described an application of photography to ornamenting candles, soap, &c., and also exhibited some ball engagement cards ornamented with photographs of an appropriate character, and remarked that these were only examples of a great variety of minor applications of photography, which were, he thought, worthy of the attention of many photographers.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Ever since the publication, by Charles Dickens, of certain passages in the history of the late Mr. Gradgrind, it has been the custom of certain weak-minded members of the community to sneer at the men who "want facts," and the expression of such a desire is regarded as a confession of a mean, narrow, hard nature. But one is constantly reminded, nevertheless, of how much mankind at large love facts, and I was especially struck with the illustration of this when I noticed the interest with which the members of the Photographic Society watched the demonstration by Dr. Van Monckhoven of the efficiency of his enlarging apparatus at the December meeting. The exhibition of the instruments, and the practical illustration of what could be effected, had more interest than the reading of a score of theoretical papers.

It is true I have heard some muttered grumblings since, and the question asked, after all, what was the instrument but a magic lantern, and what was the light but that patented by Carlevaris a few years ago? To which questions, if I were called upon to respond, I should be disposed to reply, that all enlarging cameras must partake of the character of the magic lantern, and that it was a boon, surely, to have an opportunity of witnessing how efficiently a magic lantern, especially one specially arranged for the purpose, could be made to produce enlargements. The new light, or rather lights, to which Dr. Monckhoven has been giving his attention, are not yet sufficiently perfected to be recommended for practical use; but the application of the Carlevaris principle was most ingenious and satisfactory.

I have been a little amused, on reading in the American journals, to note a complaint made at the New York Society. Mr. Chapman complains of the recent republication in America, and accrediting Mr. England with the idea, of the plan of boiling the printing bath as a means of getting rid of the accumulation of organic matter, seeing that he himself published the plan in 1865. If Mr. Chapman refers to the second volume of the Photographic News, 1859, he will find the method referred to there, not as a novelty, but as a recognized method. Its republication as a process used by Mr. England was rather to give it the weight of his experience, I apprehend, than to claim for it any special novelty. Mr. Hull is reported to have remarked that the "Old World usually claimed as their own whatever happened to be first produced in the New"! If Mr. Hull be correctly reported here, he is surely, as a photographer, a little oblivious or ungrateful. America has contributed a respectable quota to the progress of the photographic art, but I have yet to learn that the Old World has laid profane hands on any of the laurels of the New in this art. Was photography on silver plate, glass, or paper discovered in the New World? Was the collodion process discovered there? Was the carbon process discovered there? Was the Woodbury process discovered there? Was the Alberttype process discovered there? In short, to be an inventive and ingenious nation, does it not seem a fact, that whatever of executive skill and enterprise they have shown, they have not contributed their fair quota to the discoveries of the photographic art? Nor have they introduced novelties or improvements which have taken their place in the universal practice of the art. With all friendly feeling, and without a desire to introduce any bitterness into the matter, I should like to ask those American photographers who charge the Old World with a "habit of appropriation" in regard to American photographic ideas, to point out one important photographic discovery, which has come into practice, which does not belong to the Old World, and also to point to one important American modification or improvement, the origin of which has not been duly acknowledged.

Amongst the interesting events of the month was the lecture of Mr. Davenport on prints and their production, illustrated by a most complete collection of prints, forming a practical history of pictorial printing processes. I believe the pictures still remain on view at the Society of Arts: such a collection should, if possible, be kept on view in some of our public institutions.

The controversy on the origin of the collodion process seems to have terminated much where it began. Every one seems to admit that Le Gray first suggested or tried collodion, and that Archer first published a workable formula, which practically gave birth to the process; and different minds will give different degrees of credit to each, just in proportion as they attach importance to initial ideas, or that practical development of ideas which gives to "airy nothings a local habitation and a name!" Mankind generally have agreed to give the credit to him who has made a thing practically possible. Steam engines existed before the time of Watt, but he made such improvements as gave practical value to steam machinery, and with his name is associated its practical introduction. Tramways and locomotive engines existed before George Stephenson, but to him is accorded the credit of introducing the system of railway transit. The idea of photography existed before Niepce, Talbot, and Daguerre, but their names will always be associated with the origin of photography as an art. Pretsch first suggested printing from a film of bichromated gelatine, but no one will deny to Albert all the credit of the beautiful system he has perfected.

It is curious how little, in the way of suggestion, has been published in relation to the preparation of sensitive papers which will keep. Several excellent samples are in the market, but the secret of the mode of preparation seems to be well guarded. Most photographers are familiar with the fact that washed sensitive papers will keep very well, but that the prints from such papers lack vigour. Carrier's paper may easily be an example of this mode of treatment. The collodio-chloride papers of the Leptographic Company, Obernetter, and others gave, however, great force and richness, as do the permanent albuminized papers in this country. It is clear that the free nitrate is not washed away in these cases. What is the secret? If it were not for the fact that silver printing must be superseded by carbon, I should consider this one of the most important of questions for photographers. For those who do not object to the trouble, the plan recently published, of fuming washed sensitive paper to restore its power of yielding vigorous prints, seems worthy of attention.

As I am not a contributor to the Year-Book of Photography, I may, without impropriety, congratulate the Editor on the admirable character of the issue for 1870, and the rare array of talent amongst the contributors. Such a number of valuable articles, on such varied subjects, by such a large body of contributors, was never, I apprehend, before issued in a shilling *brochure*. It is pleasant to see that the photographic annual which first showed the way to a multitude of followers of the same kind still keeps the van.

Society proceedings have been in several instances very interesting recently. The successful demonstrations at the Parent Society I have mentioned. At the South, amongst other things, was an interesting discussion on the gull negative, a portion of which was shown; but nothing very specific was elicited.

The Bristol Society has given two nights to the subject of glass houses and lighting, which possesses perennial interest for photographic portraitists. Mr. Ennel was ingenious, but eccentric, in his notions of the superiority of front light, and did not seem to produce conviction amongst the members. I have no doubt that Queen Elizabeth, who objected to shadow in her portraits, would have strongly approved front light, as nothing can, of course, so effectually obliterate shadow on the face.

The meetings of the Edinburgh Society always appear to be interesting. Mr. Davies read a paper on simple enlarging apparatus, the substance of which I find in his article in the Year-Book just issued. I was struck with a remark made by one member in a discussion arising out of the examination of some Albert prints. He said that much nonsense was uttered about the instability of silver printing, and added, that he had a book of Mr. D. O. Hills' photographs, which were as good as on the first day, although they could not be less than twenty-five years old. I should not like to intimate that there was anything nonsensical about this argument, but I cannot help thinking that the speaker himself must see that it is very fallacious as an argument. Mr. Hills' prints may not have changed in a quarter of a century; they may be as good as they were on the first day; but what were they on the first day? Would any professional portraitist present such prints to his customers now? Do not let me be misunderstood. I should be sorry to appear to depreciate Mr. Hills' prints: they were amongst the most artistic, as well as earliest examples of photographic portraiture. Capital in arrangement, forcible in light and shade, full of character, they were prints which any one of artistic taste must value highly. But they were not like the prints of the present day: they were on plain paper, of various tints of brown, some pleasing, others rusty or foxey in hue, and lacking anything like extreme delicacy. They had neither the tone nor the delicacy of gradation of albuminized prints of this day. Many persons will answer that the cleanness, precision, and tone in modern prints are a poor substitute for the qualities lost; and I for one am not about to dispute the position. But certain it is that the texture and tone of the old prints would not be accepted by the general public; and equally certain it is that an albuminized print will not be found to possess the rich bloom of its nativity after a fourth of five-and-twenty years have elapsed.

At the Manchester Society, amongst other interesting topics, was a conversation on Durand's sensitive paper. Mr. Sanderson remarked, that he had accidentally left some pieces in the printing-frame for six weeks, which, however, toned well, and gave prints which did not suggest that the paper had been kept more than two days: a capital testimony to the keeping qualities of the paper.

At other societies interesting meetings were held, but not calling for especial notice.

EXPERIENCES OF AN EXPERIMENTALIST.

BY WILHELM GRUNE.

Introductory Remarks.

During the lengthened period I have been engaged in photographic labours and research, I have been successful in collecting together a large number of practical results which will doubtless interest, and also be of some value to, your numerous class of readers. My very multifarious labours were confined to the chemical and purely technical branches of photography, and it is from this field of investigation that I propose to make a series of communications, which will not, however, contain the details of distinct processes or formulæ, but will partake more of the nature of a statement of facts or practical results, capable, I trust, of beneficial application by my brother photographers. I shall not follow any particular order, but shall enumerate the subjects one after another as they occur to me, turning from plate-cleaning to etching upon glass, from the preparation of enamel paper to the recovery of silver from residues, from photographing in natural colours to the production of direct negatives without development, &c.; and in this manner I hope to invoke the interest of all in some way or another.

Experiments in Connection with Photography in Natural Colours and with Collodion Plates, which are at once Developed in the Camera.

The fact, established beyond doubt, that chloride of silver under certain conditions is capable of being impressed by colours—which are reproduced by it—of similar tint; and that even iodide of silver has been known, on some occasions, in the wet collodion process, to evince a similar capacity, induced me to institute an investigation into this interesting matter; and my efforts, although unattended by success, have afforded several practical and interesting lessons.

The several methods already adopted and made known by investigators into this branch of the science I shall assume my readers to be acquainted with, inasmuch as a description of them is to be found in this Journal. The best results are obtained by means of silver plates treated with chlorine, but experiments with these plates have been very limited, on account of the expense of the same, and the trouble involved in preparing them. For these reasons I myself was deterred from their employment, and therefore adopted the idea of using for the purpose the very fine metallic film afforded in the wet collodion process. This method, which answers the purpose well, places within the reach of all the power to observe and examine into the impression made by colours upon chloride of silver.

A well cleaned glass plate is coated with collodion and sensitized in the ordinary manner, then exposed to diffused light for a few seconds, and afterwards developed with iron. When fixed and washed, there is present upon the plate a fine precipitate of metallic silver, and if to the developer a few drops of sulphuric acid have been added, the silver assumes a very light tint, and rests upon the collodion film. The plate is dried, and then exposed to chlorine vapour until it has become of a violet tint, a point easily determined by observation through the transparent glass.

For experiment upon paper, the white precipitated chloride is first converted by means of diffused light into the violet chloride of silver, and then placed upon the paper; but, owing to the substance of the latter, no very accurate investigation can be made with it.

My manner of proceeding is to employ a silver plate—prepared as above described by means of the wet process—and to place this in a solution of chloride of iron or chloride of copper, or in a mixture of permanganate of potash and hydrochloric acid. The silver quickly changes into white chloride of silver, which, after washing in water and drying, may easily be coloured violet by diffused light. This is subsequently placed under coloured glass and exposed in the sunlight, when the colours will be found to be reproduced with much accuracy.

In order to reproduce natural colours with wet collodion, with iodide or bromide of silver, therefore, I have made many experiments, which demonstrate that the problem is, by these means, capable of solution in a very simple manner, as, indeed, all who follow in my footsteps will be able to affirm.

I employ, for the purpose, a camera used in the production of collodion positives, and, in lieu of the negative, place therein a highly-coloured transparent picture upon a black ground—such as a bunch of flowers, &c.—so that all light which enters the lens passes through the coloured plate. With the different collodions and various pyrogallic acid developers in general use plates may, in this manner, be obtained, which, after fixing and drying, show colours, which, if weak, are still very distinct, and which are visible either by transmitted or reflected light. By using collodion containing but a fourth part of the usual iodizing solution, and over-exposing the same, the results are even more marked. Pure bromide collodion also furnishes some very interesting results. By developing with an acid iron solution, very definite colours may be obtained, the red and blue being especially striking.

This research I was regretfully compelled to discontinue, and very many experiments may still be made before this field of investigation can be regarded as exhausted. Attention to slight details and minute particulars will, no doubt, be instrumental in bringing about a practical solution of the beautiful problem of photographing in colours, for an impossibility it remains no longer.

Through the medium of these experiments, I finally acquired an experience which, for other purposes in photography, may possibly be put to some practical use. I became possessed of the idea that, in order to obtain a better result in regard to chromo-photography, it would be well if the colours could be developed at once in the camera by light, as in the case of chloride of silver. This I achieved by changing the general order of the manipulations through which a plate passes before an image is created. Iodide of silver, light, and a reducing agent, are necessary to the production of a photograph: two of these employed together are without effect, but the presence of the third at once develops a picture. In a general way, we employ first iodide of silver, then light, and then the developer or reducing agent; but I altered this order, taking first the iodide, then the reducing agent, and subsequently used the light to bring out the perfect result.

A plate is collodionized and sensitized in the usual manner, treated with a pyrogallic acid and alcohol solution, and then exposed in the camera; a perfectly developed picture is thus obtained, on opening the dark slide, requiring to be fixed.

From this result much may be learnt, for enlargements upon paper by the development process; and for photographing out of doors this mode of operating would be useful, inasmuch as the fixing of the negatives may be considerably delayed. For cameras which serve at the same time as laboratories, and in cases where it is of importance to watch the gradual action of the light, this modification would also be advantageous. I will, at some future time, come back to this question, in order to discuss it more fully

ACCELERATION OF EXPOSURES.

BY WM. BLAIR.

I have perused with much interest, and, I may add, satisfaction, Mr. Paget's remarks on this subject in this Journal (the Photographic News of 24th December last). He has evidently given the matter good consideration, and I am ready to admit that he has laid his finger on what I had a fear might turn out a questionable point in my statement. At the time I wrote my *first* paper, I had certainly the idea that it was useless to expend the influence of diffused light upon the plate before there was any impression from the camera upon it, and that it was better to get the pictorial impression first, and then to bring it up by the force of diffused light to the developing stage. By the time I wrote my *second* paper, however, I had begun to turn the question a little more round in my mind, and made some alterations in the window of my dark room and the wrappings of my bath, at the risk of admitting a little diffused light to my plates even before exposure; and it certainly does now appear, from what looks very like a demonstration by Mr. Paget, that, at least up to a certain point, it is a matter of indifference whether the exposure to diffused light, if properly regulated, take place *before* or *after* the plate has passed through the camera, or, I presume, simultaneously with the exposure in the camera. If such be found the case, so much the better, as it gives the application of the rule a wider range; and we are all obliged to Mr. Paget for pointing this out so clearly.

After making this explanation, I do not know that I require to follow Mr. Paget into other parts of his paper, in which he expresses some doubt as to having fully understood me. I did not attempt to lay down any particular theory as to the way and manner in which light or developers act upon a sensitive film. I simply assumed that the weakest impact of actinic light does produce a slight effect or change of some kind, but whether by starting a movement among the particles, akin to that of development, or merely preparing them for a commotion of that nature so soon as they feel the spur of the developer, I did not venture to say. I assumed that an action or change of some kind did commence at once, and that this action or change required to be propelled on to a certain stage before our developers, even the most energetic yet discovered, became available, either to carry on the change already begun, if of the same nature, or to start and continue a new and peculiar action, which then begins, and which results in the formation of a visible image. And here I may remark that though it be true, as noticed by Mr. Paget, that a spring of small power (say, equal to one pound weight), though applied ever so long to a railway carriage, might fail to move it, still it would at once diminish so far the power of resistance, and another, and another, pound successively added, would at last produce motion. So with a lucifer match applied to a large cauldron of water. Though kept burning for any length of time, the water would never boil; but gradually increase the number of matches, and ebullition will at length be reached, showing that the first pound and the first match were not without their effects. Long before motion, however, is reached in the case of the carriage, and long before the boiling point is reached in the case of the cauldron, under the first means used, a second power may be called in, to co-operate with the first, which, while incapable of originating the change which has been going on, may be capable of continuing or accelerating it, or even of investing it with new properties, just as a flame once kindled may be greatly altered in its powers, properties, and appearance by a change of fuel. Weak actinic light, however, thrown upon a plate, does not, as I understand, act in the same way as the one pound spring on the railway carriage. The effect of the weak spring is not accumulative by prolongation of the time. Its power is neutralized by the resistance as it is exerted, and at the end of an hour or a month matters are just where they were. Not so, however, with the light on a sensitive plate. Every moment's impact not only makes, but *leaves*, an impression, which will last for a considerable time, though the light be withdrawn. It thus goes on accumulating or strengthening, and therefore we naturally conclude that the effect produced is great or small, according to the length of exposure. I have accordingly assumed, in my former remarks, that a long exposure to weak light is equivalent to a short exposure to strong light. I thought there was sufficient truth in this, within certain limits, to satisfy the practical object I had in view; but in reality I suspect that if this subject were to be followed out very minutely, this doctrine might require to be received with some qualifications. I am scarcely prepared, however, and do not intend, to enter upon these at present.

In Mr. Paget's remarks upon my second paper, in which I touched more particularly on the use of *reflected* light, he points out that the effect of such light used in the manner suggested must be quite the same as if a longer exposure by about one-half were given to the influence of direct light, which did not suffer reflection. This is exactly what I tried to explain, and I am glad that he agrees with me in this. I also agree with him in thinking that diffused light is still preferable for bringing up weak details in the shadows; but I recommended that so far as practicable and suitable for the work in hand, both diffused and reflected light might be used together or in combination.

All these remarks, however, are to be taken in connection with comparatively short exposures. With long exposures, other changes take place, which I have not attempted in any way to deal with. In ordinary circumstances, what is called a long exposure (and this expression again is relative, depending on the process we are working), brings up the weaker details with comparative rapidity, so that they gain upon the high lights, which do not develop with the same accelerated speed. Hence the impression becomes soft or wanting in contrast; but a very energetic developer, the operation of which is stopped at the proper time, will go far to counteract this, showing that the vigour of the developer should generally bear a relation or correspondence to the amount of exposure. If, then, long exposures bring up the shadows quickly, and the use of a reflector makes a short exposure equivalent to one about a half or third longer, then reflected light, used as stated, must also have a tendency to bring up faint details; and this may be regarded as an additional plea for holding that diffused and reflected light would work well in conjunction. Should the diffused light not be applied simultaneously with the principal exposure, I am of opinion that it will still be found more convenient to apply it *after* than *before* the exposure, as it will be easier then to calculate how much it may require.

When a reflecting medium is used behind the plate, Mr. Paget seems to think it highly necessary that only perpendicular rays of light should reach the plate, and emerge exactly where they entered. He recommends, for this reason, that the angle included by the lens should be small, as light emerging at an obtuse angle would be injurious to sharpness. However correct this may be, theoretically, I do not think there is anything in it practically to alarm us, if the reflector, as I recommended, be kept quite close to the film. The thickness of a collodion film, and especially a dry one, is so very small, that a reflected ray of light emerging from it, even at a very wide angle, can scarcely spread to an appreciable extent. If the ray went past the film to some little distance, and back through it again at a different place, of course the case would be different, and the picture would be spoiled; but the distance travelled—merely to the back of the collodion and out again—is scarcely measurable, and may almost be regarded as a point, so that I hardly think there is anything in the objection to make us narrow the usual scope of our lenses. A few experiments, however, will set this matter at rest.

Bridgend, Perth, January, 1870.

WET AND DRY-PLATE PROCESS UNITED.

BY T. GULLIVER.

HAVING a little spare time to visit a few photographic friends, and knowing that they were living in a part of Southwater where views suitable for the camera were to be obtained, I arranged a set of apparatus that should combine lightness, ease of working, and certainty of results.

First, the portable dark-box. This was a wooden tray, twenty-one by seventeen, with a lid, having an opening about sixteen by twelve, and round this was tacked a black velvet hood with black casbau lining; this hood slipped over one's head, and two short sleeves, one on each side, afforded egress for the arms; a piece of American cloth tacked round the edges of the tray and lid allowed an opening sufficiently wide to coat the plate.

Secondly, the camera. This was merely a dark-box without dark slide or focussing-frame, and was made only a little larger than the plate required, five by four.

Thirdly, nitrate bath, bottles of chemicals, &c. These were all selected light as possible.

Now for the way of working the above. The different views intended were duly selected, and, one after the other, photographed, and stowed away in the plate-box; and, at the conclusion of the day's excursion, the plates were cleared with weak cyanide, then well washed and dried, and stowed away until my return home. They were then kept, some of them, for weeks, then edged round with black varnish, and dried; then a small quantity of methylated spirit and water (mixed) was poured over the plates; this was well washed off, to prevent staining; then the plates were intensified with pyro, citric acid, and silver to the proper density, then dried and varnished.

The negatives thus taken are not quite so good as when the plates are intensified without drying, but they are superior to any dry plates that I have been able to work; and the trouble of taking them is but slight, only a few minutes being required to coat the clean plate, develop, and return the embryo negative to the plate-box; the exposure only a few seconds, instead of minutes; and no trouble or slop at friend's house or hotel which you may happen to select for head-quarters; and last, but not least, the certainty.

I will send a few prints for your opinion upon them. The negatives were kept for three, and some five, weeks before developing, &c.

THE CHLORO-BROMIDE PROCESS.

BY M. CAREY LEA.*

I PROPOSE to give the above name to a new form of the collodio-bromide process which I have just finished working out.

Some years ago I made and published some experiments upon development on chloride of silver on paper. The chloride paper was exposed under a negative, in some cases for a very short time; in others, until a visible image appeared. It was found that, in the latter case, where the exposure was continued till the whole image was visible, and then finished by development, a better result was got than when iodo-bromide of silver was used, and I recommended this mode of development for regular use in development printing. But the most remarkable result was got where the exposure was very short. In an experiment in which a single magnesium spiral was burned in front of the negative, nothing at all was visible when the paper was removed from the frame. According to received ideas respecting the comparative insensibility of chloride of silver, development of this under-exposed invisible image ought to have produced a very harsh, black-and-white picture; instead of which a thin picture, crowded with detail, was obtained. I remember mentioning that some extremely faint detail, which I had noticed in the negative, with the thought in my mind that that portion would never show in any print, was distinctly visible in this development. At the same time, the image was so thin, flat, and destitute of vigour as to be wholly worthless as a positive, and was only of interest in connection with the curious properties so unexpectedly disclosed.

The publication of these experiments, showing such unthought of sensitiveness in chloride of silver, naturally led others to experiment in the direction of plates for the camera. Nothing, however, of interest was elicited, nor was any step made towards the discovery of the function of chloride of silver in connection with collodion negatives.

This function I believe I have now succeeded in making out. The true use of chloride of silver is to be found in connection with bromide in the collodio-bromide process. And, if I do not deceive myself, it will be found that this application of chloride of silver will be equal in importance, and not dissimilar in character, to the introduction of bromide of silver into the regular wet process. For, although excellent work was done with the iodide of silver process, yet the introduction of bromide gave a great certainty, ease, and freedom from fog. So, although capital work can be done with the collodio-bromide process, nevertheless, the introduction of chloride enables us, with ease and certainty, to get a bright, vigorous image, coming up with facility to any degree of intensity desired, supporting with great ease a re-development with nitrate of silver and acid pyro if desired, in consequence of inadvertent under-exposure, and without any need of previous fixing. Indeed, the addition of even a very small quantity of chloride so effectually destroys all tendency to fog, that the use of a soluble bromide in the development becomes superfluous, even where the sensitive collodion has been prepared with a large relative excess of nitrate of silver. A liberal excess of nitrate of silver in the collodion tends to exalt the sensibility, but obliges great care to be taken in the development, and the use of plenty of bromide of potassium. But, by the introduction of chloride, all this tendency to fog disappears at once, and the development goes forward as brightly and cleanly as can be desired.

The proportion of chloride necessary is singularly small. A grain to the ounce of collodion seems to be quite sufficient in most cases. In some it may be raised to two grains, in others lowered to half a grain. It is wonderful to see how complete a change in the character of the plate the addition of so small a quantity as half a grain will make. The quantity to be added will always depend upon the character of the collodion in use and the result desired. The more chloride added, the greater will be the vigour of the resulting negative.

The chloride which I have selected for use is the chloride of copper. Of course, others may be used, such as the alkaline chlorides, chloride of cadmium, of calcium, &c; but the chloride of copper leaves nothing to be desired. It is easily obtained pure; it is very soluble in alcohol, and works in all respects satisfactorily. So also, doubtless, will other metallic chlorides and chloride of lithium. Other alkaline chlorides than lithium I consider objectionable, because of their sparing solubility in collodion. A great deal of mischief results from the use of sparingly soluble salts in collodion, and this has been especially the case with bromide of ammonium. I cannot stop now to enlarge on this, but shall simply remark that the transparent specks that have greatly annoyed some who have tried the collodio-bromide process have resulted from this cause. More than two grains of bromide of ammonium cannot be usefully dissolved in any collodion as free from water as collodion should be. A larger quantity than this may, indeed, be got into solution by the use of hot alcohol. But, when the collodion is so fully charged, slight depressions of temperature will cause it to crystallize out into invisible particles that remain suspended in the liquid, and cause insensitive specks in the negative.

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* *Philadelphia Photographer.*

This is ample reason for rejecting all the alkaline chlorides, which are still less soluble in alcohol than the bromides. Chloride of lithium is, of course, an exception, but it is scarce and expensive, and, as said before, chloride of copper leaves nothing to be desired. I use it in solution in alcohol, sixteen grains to the ounce, so that each half drachm contains one grain. It may, of course, be dissolved in the collodion together with the bromides, but at first, at least, the photographer will find it more convenient to keep it separate, and to add it at the time of sensitizing. In this way he can regulate the quantity according to the results obtained.

The following are the formulæ which I recommend for use. I have always preferred to use a collodion richer in bromides than many others who use the collodio-bromide process. If found too thick, it is easy to thin it with ether to any desired thickness; but I have always found that it was best to apply the collodio-bromide as little thin as possible: a rich, creamy film always gives the softest pictures, and with the most detail in the shadows. I therefore make my collodion:

Alcohol and ether (equal parts) ...	1 ounce
Bromide of cadmium	10 grains
Bromide of ammonium	2 ,,
Pyroxyline	6 ,,

Everything will depend upon the equality of the pyroxyline, which must be intense and powdery. The best I have had has been supplied me by Mr. Parys, of this city, though I have had very good intense "Helion" from Mr. Cooper, of New York. A skinny collodion is very objectionable. This last quality is, of course, easily judged of by the common method of drawing the finger through the film just as it sets. The finger should plough straight through without tearing or making a jagged track. As to the intensity which is essential if gum is to be the preservative (and it is by far the best), I know no better way than to procure several specimens, make them up, and set them aside for a month; then give them an actual trial, and adopt that which gives the best result, laying in a supply to last for a long time.

As respects the keeping of collodion, my own experience has been, that it gains in sensitiveness for a long time by keeping. But some specimens blister worse after keeping for six or eight months than after one month. The trouble from blisters, however, when they occur, is more apparent than real. Gum, however, which gives the most sensitive plates of all preservatives that I have tried, tends to blisters. But if the plates are well washed, the blisters dry up without leaving stains; good washing after fixing is, however, essential.

Having then prepared a solution of chloride of copper, sixteen grains to the ounce of alcohol, I add to each ounce of collodion half a drachm of the chloride solution, and sensitize it with twenty grains of finely-powdered nitrate of silver.

Now, as to the sensitizing, great differences of opinion have been expressed as to the time for which the mixture should wait after the silver is added, in order that it may reach its most sensitive stage. In my own experience, I have never found the mixture in its best condition until fully forty eight hours have expired after the addition of the silver, and I think that more persons have probably failed in consequence of using the mixture too soon, than from all other causes put together. A mixture after forty-eight hours will give plates that will be fully exposed with an amount of exposure which, had it been used at the end of twenty-four hours, would have given a half-exposed, chalky, black-and-white negative.

Not only this, but I have long recognized and acted upon the fact that the mixture acts much better if it has been treated in the following way. Suppose we want four ounces of sensitive mixture, we take a little less than this (say three ounces), and sensitize it, shake it frequently, and, at the end of a day, add the remaining ounce, thus bringing the bromide into excess. This stands, with occasional shaking, for half a day. Then the silver corresponding to the last addition of collodion is added, well shaken up at intervals, and, at the end of half a day (making in all, the two days), it is in its best condition. Although this proceeding is not absolutely necessary, and although very good results are got by simply adding the quantity needful of nitrate of silver to the whole of the collodion intended to be used, yet, nevertheless, there is a decided advantage in proceeding as above. I have used this method with unimportant variations for years, and have described in my manual, and, I think, in your pages.

After using what I want, I add, according to the custom usual with those who work the collodio-bromide process, some of the bromized collodion to the residue, by which admixture it keeps well, and is again ready for use by adding nitrate of silver corresponding to the quantity of collodion last introduced into it. It is not well, however, to do this too often. But, after thus testing the residues for three or four times, it is better to use it all up and start afresh. To explain why would require too much room at present.

I next come to the preservative. I greatly prefer preservatives in which gum forms an essential portion. Nothing, so far that I have experimented with (and I have tried a vast number of substances), has given the same sensitiveness as gum; at the same time, if not properly managed, there is a tendency to thinness of the image and to fogging. As the introduction of the chloride is very favourable to the prevention of fogging, it is with gum that it will be found to be most useful. Together with gum, I use sugar and litmus. The sugar seems to be chiefly useful for keeping the film in a porous condition. It dissolves out rapidly when the plate is developed, and leaves the film in a spongy condition, favourable to the rapid and equal penetration of the developer. The litmus I at first tried for the purpose of darkening the film and diminishing its penetrability to light, but it proved to act most favourably upon the sensibility of the film and the vigour of the image. It may be used either blue, or it may be reddened by acetic acid. If used blue, it is best to lightly wash the plate first, because silver gives a precipitate with blue litmus. With litmus reddened by acetic acid, the tendency to precipitate is greatly diminished, and a previous washing becomes superfluous, and even injurious. On the whole, I prefer the blue; or the gum and sugar may be used without the litmus. I give all three methods: the first involves a very little more trouble than the other two, but it gives a more sensitive plate, and I therefore use it myself, and recommend it, in preference. All, however, give good results.

No. 1.

Take a quarter of good dark litmus (the French is better than the German), cover it with boiling-water, and set in a warm place for some hours or a day. Pour off the liquid into a filter, and add more water; after pouring this off, throw also the grounds upon the filter, and wash through with hot water until the filtrate amounts to a quart. Add a little carbolic acid (half a drachm), and the liquid will keep indefinitely. I have used it six and eight months old.

The bath is made by dissolving—

Best gum arabic	20 grains
Loaf sugar	12 ,,
Water	1 ounce

The litmus solution is added to this in the proportion of an ounce to each four ounces of the gum-water.

After the plate is collodionized, allow it to get barely set, and plunge it into a pan of water, where it may lie either a long or a short time, except that all greasiness must be gone. It is then plunged into the above bath, left there six, eight, or ten minutes (fifteen will do no harm), and is then dried.

No. 2

Differs from the above in this only, that a little acetic acid is added. I use what is called No. 8, corresponding, I believe, to Beaufoy's acid, and put in twenty-five minims to each ounce of litmus solution, say a drachm to each two and a-quarter ounces, or thereabouts. Into this the plate is plunged as soon as the collodion is set. It is left in till the greasy marks are completely gone, allowing rather a little more time, than less, and is then ready to dry.

No. 3

Differs only from the foregoing in the entire omission of the litmus, and, consequently, of the acetic acid. Plates are immersed without previous washing, as in No. 2.

It is well worth while to take the little additional trouble required with the first of these, and so secure the best results.

The development is effected by plunging the plate into a bath, which, for six and a-half by eight and a-half size, is made as follows:—

Water	6 ounces
Sixty-grain solution of pyrogallic acid	½ drachm
Eighty-grain solution of carbonate of ammonia	½ "

It is better not to add the whole of the carbonate of ammonia at once, but to begin with about a third of it only, and add the rest after the detail is out. In my own experience I find bromide of potassium unnecessary, except there be indication of over-exposure by the too rapid flashing up of the image, when it may be well to add some. Fix in very weak hyposulphite.

It is altogether probable that the advantages of the chloride will be found to vary with different specimens of collodion, and different preservatives. The great gain which I find in its use is, that it admits of our raising the sensitiveness of the collodio-bromide mixture to the highest degree, by protecting us from the dangers which accompany that mode of operating. Some have feared these so much as to recommend using either just enough nitrate of silver to correspond with the bromides, or even to use less, and leave the bromides in excess. In this way a clean plate is secured indeed, even if the operation has not been very well managed, but at a great sacrifice of sensitiveness. Now the introduction of the chloride enables us to obtain perfect clearness, and, at the same time, retain the exalted sensitiveness which can only be obtained by having present a liberal excess of nitrate of silver.

I propose to call the new process the Chloro-Bromide Process, in order to mark the characteristic features which distinguish it from all the other forms in which Messrs. Sayce and Bolton's invaluable collodio-bromide has been worked.

PS.—Those who already use the collodio-bromide process, and have the collodion already salted, can apply the chloride to it by adding to each ounce half a drachm of sixteen-grain solution of chloride of copper in alcohol. This addition will necessitate an increase in the nitrate of silver of two and a-half grains beyond what the collodion needed before. It will be found that the introduction of chloride admits of the use of a larger excess of silver, with consequent gain in sensitiveness, so that those who have hitherto worked with a very small excess of silver can increase it.

PRINTS AND THEIR PRODUCTION.

BY S. T. DAVENPORT.*

Printing has been described as the means employed to impress on one substance the idea produced on another. The earliest examples of it are probably to be found in the bricks which were used by the founders of the cities on the banks of the Euphrates and Tigris; and bricks from Babylon, impressed with the cuneiform characters, may be seen in the British Museum.

"The Egyptians appear to have made a close approximation to printing; some of their wood stamps yet remain, and are capable of giving impressions in the same manner as the wood blocks of our own times. The use made of these blocks by the Egyptians was, doubtless, that of stamping clay, and bricks so impressed are frequently found. One of these stamps was found in a tomb at Thebes, and was brought to this country by Edward William Lane, Esq.; it is five inches long and two and a-half inches broad.

"The ancient Romans marked their cattle and horses with a metal stamp containing letters. The stamp was dipped into fluid pitch, and was used to print on the bodies of animals; but, in the case of runaway slaves, the stamp was made hot, and printed into the captive's cheek or forehead. The Roman law required that bread should be printed or stamped with what may be called a trade mark, indicating its composition.

"Examples of this practice have been found in excavating the buried city of Herculaneum, and, in one case, the loaves thus wonderfully preserved during 1800 years were marked in the following manner:—

SILIGO E GRANIS
ET CICERE,

meaning that the finest wheat flower was mixed with the meal of peas or lentils. Marking manufactured products was a common practice among the ancient Romans, as is evidenced by the examples of pigs of lead which have been found; and, in England, by the '1st James VI., cap. 3,' by the '1st James I., cap. 7,' and the '39th Elizabeth, cap. 4,' beggars were to be branded with a hot iron, so that the mark should remain during life."*

Thus, from the earliest ages, and in all countries, the principle of stamping or printing has been known and used; but, says John Fary, "during the dark ages of ignorance and superstition which followed the decline of the Roman empire all the arts and sciences were neglected in Europe. A small remnant of the writings of ancient philosophers was preserved by monks, who read and copied them without comprehending their meaning, and this they frequently perverted to suit their own reveries of magic, astrology, alchemy, and logic. . . . . After a long lapse of barbarous ignorance, the useful arts and trades which were practised by vulgar artisans were improved, and many discoveries were imported into Europe from Arabia, where science was first cultivated. By degrees the useless learning and philosophy of the schoolmen began to fall into disrepute, and the progress of civilisation was promoted by several important inventions which were made by those who were unlearned. Such was the origin of the mariner's compass, fire-arms, and the art of navigation, building, painting in oil, engraving, printing, &c. These inventions have produced a great and general revolution in the state of Europe, and have wonderfully improved the condition of mankind in all parts of the world."

From the reign of Charles I. to that of George II. it is well known that, in England, the arts of painting and engraving did not receive much encouragement. It is from the latter period that we have to date our history of the progress of art in this country, at which time the chief occupation of artists was painting portraits and signboards. To the arts of engraving and printing we are indebted for much of our knowledge of the works of artists of the past; by their aid, also, the manufactures of the country have been improved, and commerce extended. In the early part of the reign of George II., though art was little encouraged, a regular trade with the Continent existed in works of art, and it is stated that the picture-jobbers imported by shiploads "Dead Christs," "Holy Families," and "Madonnas," &c., on which they scrawled the names of Italian masters.

At the same period, literature was far in advance of the fine arts in England. Foreign engravers were employed to produce the illustrations required for the works issued to the public; even the paper on which they were printed was chiefly of foreign manufacture.

Engraving, as then practised in this country, was, like painting, almost entirely confined to portraits, the process being mezzotinto. In 1732-3, George Virtue engraved a series of portraits for an edition of "Rapin's History of England," which was, probably, the first illustrated work published in weekly numbers in London, and it is stated that thousands of copies were sold. It was upon this newly-discovered predilection of the million for illustrated works that Hogarth, in 1733, founded his hopes of patronage for his talents as an artist, and was led to paint and engrave a series of pictures of moral subjects, treating them as a dramatic writer would, but making the picture the stage for the players, and, by certain actions and gestures, exhibiting dumb show.

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* Read before the Society of Arts.

* See "The Invention of Printing," a Lecture, by Charles Tomlinson, F.R.S.

Hogarth's prints of "The Harlot's Progress" were the first of the series which he published, and they were highly successful. One thousand two hundred copies were immediately subscribed for. The subjects were copied for different articles of fashion. A piece was brought out at one of the theatres, founded upon them; and copies of them were engraved, of various sizes, and impressions spread throughout the country, and sold by means of hawkers. Hogarth, rendered sensible, by these acts of piracy, that published engravings were the common property of all adventurers, and feeling the danger to which his enterprise was consequently exposed, called a meeting of his professional brethren, and an application to Parliament for a Bill to secure to artists exclusive enjoyment of the copyright of their own works was the result.*

Up to the time of these publications, there were but two prints shops in London; their trade consisted in foreign prints, and in English engraved portraits, and was of very limited and unimportant extent. But the introduction to the town, from time to time, of Hogarth's visible forms of virtue and vice, by constituting framed and glazed prints, fashionable decorations for rooms among the middle class of society, the making collections for folios, and the awakening among dealers a general spirit of enterprise in engraved works, imparted to the trade an entirely new character; and the Copyright Act, obtained by Hogarth in 1734-5 (8th George II.), having given security and confidence to the various interests growing out of that new state of things, print shops were opened in various parts of the town; and whilst the works they exposed to view, by drawing the attention of the public, aided in making artists known, and in diffusing taste for art, they constituted an entirely new characteristic of the metropolis of Great Britain.

(*To be continued.*)

Correspondence.

MR. ROBINSON'S GOLDEN SYRUP SOLUTION FOR PRESERVING WET PLATES.

Sir,—Under the above heading in the Year-Book for 1870 I find mentioned the experiences of several gentlemen in reference to some of the difficulties they have had to contend with in using the syrup.

But none of them appear to have met with this difficulty, *i.e.*, the shadows of the negative turning a reddish-brown almost immediately the intensifier is applied.

Like Mr. Burgess, the first time I tried the syrup it worked excellently, and I was quite pleased to find what a lot of time and trouble would be saved by the process; but the next time, almost directly I applied the intensifier, I was surprised to see the shadows turning a reddish-brown, the negative thus being made quite useless for printing. I had taken about half-a-dozen negatives that day, so had five more to finish, and I felt very nervous about them, for, supposing they all went like the first, I could not possibly replace them. The fault could not be in the syrup, as it was the remainder of the same solution I had used in my first successful experiment. Neither was it in carelessly exposing the negatives to the light between developing and intensifying, as they were kept in a light-tight box used for dry plates. In fact, everything was in just the same condition, to all appearance, as when I first tried the syrup. At last I came to the conclusion that it must be in the washing, and, therefore, I was more particular in washing the other five negatives. My plan was first to give them a good sluicing under the tap, and then place each negative in a separate dish of water, and leave them soaking for about thirty minutes; after which I gave them another washing under the tap, and then proceeded to intensify. I am glad to say I found my plan a perfect success, and have followed it ever since. I have not seen any symptoms of the complaint from that time—which is about twelve months ago now—up to the present, and I always use the syrup when away from the studio, both for landscape and groups. I am sure photographers are greatly indebted to Mr. Robinson for his kindness in making it public, and I, for one, thank him very sincerely for that and other communications which he has sent the News and Year-Books.

Wishing you, Mr. Editor, a happy new-year, I beg to remain, yours, respectfully, A. Nicholls.

Post Office Terrace, Cambridge, January 11th, 1870.

ROWSELL'S GRAPHOSCOPE.

Dear Sir,—My attention has been called to a letter of Mr. Rowsell's, in your last number, charging me with unfair and dishonourable conduct in connection with his "Patent Graphoscope." Permit me a few words in reply.

I undertook, some fifteen months ago, to manufacture for Mr. Rowsell a few dozen graphoscopes, with the promise of very large and continuous orders. That he discontinued his orders on account of inferior workmanship I emphatically deny. It was for a totally different reason. The imperfections complained of were of the most trivial description. With regard to the quality of my workmanship, I think I may say, without vanity, that it has for many years maintained a position second to none.

Since Mr. Rowsell discontinued his orders, I have made graphoscopes for respectable houses and dealers who, I am sure, would do nothing either dishonest or unfair; indeed, I think the dishonesty and unfairness is on Mr. Rowsell's part, in imagining that he can have the security and protection of a patent for a number of years without paying the fees demanded by Government for such protection.

With respect to the optical part of the instrument, on which Mr. Rowsell lays such stress, having been connected with photography and the manufacture of photographic apparatus since 1850, I have acquired some little knowledge of lenses and their properties. My lenses are made specially for me by one of the best houses in the trade, and both the cabinet work and lenses are far superior to any in the market.—I am, sir, yours obediently, Geo. Hare.

1, *Lower Calthorpe Street, Gray's Inn Road, London.*

USE OF THE SOLAR MICROSCOPE IN PHOTOGRAPHY.

Dear Sir,—I should consider it a favour if you, or any of your subscribers, could give information on the following subject.

I have got a solar microscope, a rather powerful one. Could I enlarge with it, and what small objects are most suitable for the purpose?

As I see no mention made of the solar microscope in the catalogues of the London opticians, I should be very glad to know where I could purchase slides for it; I mean objects already prepared, either photographed or otherwise.—Yours very truly, J. A. Reed.

[The earliest developed photographs were produced by means of the solar microscope. Perhaps some of our readers may be able to give our correspondent some hints.—Ed.]

THE CONDUIT STREET EXHIBITION.

Sir,—Your correspondent, Mr. William Brooks, in the last weeks News (January 7th), whilst, on the whole, giving great praise to the hanging committee, and their endeavours to please all their contributors, complains that his pictures were hung too low to be seen to advantage.

One of their duties, which he does not seem to think requires consideration, was that all those who were members of the Society, and paid a subscription every year, should have their works of art, if worthy of a good position, attended to first of all.

If Mr. Brooks will kindly allow his name to be proposed as a member, and so help to pay the expenses of exhibiting, he will have a still greater claim next time to be hung nearer the *line*, but if not, he will receive the best consideration for any pictures he may like to send.—I remain, yours truly, One of the Hangmen.

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* See John Pye's "Patronage o British Art."

January 10*th*, 1870.

[We have pleasure in stating that Mr. Brooks is now a member of the Society, and had signified his wish to join before the opening of the Exhibition, but, of course, he could not be elected until after the opening of the session. It is but natural that when excellence is equal, the claims of members will take precedence of those of non-members at exhibitions under the direction of any society.—Ed.]

CLEANING PLATES.

Dear Sir,—Knowing this will be useful to many of your readers, if you think proper, you can give it publicity, for I can assure you that I have found it a great saving, and very useful. It is a method I have adopted for cleaning old varnished negatives. Put an ordinary pan on the fire, which will hold (say) one gallon of water, half fill it, put a quarter of a pound of common washing soda in, let it boil, then drop your plates in while boiling; when cold enough to take out of the pan with your hands, put them in clean cold water; you will then find them beautifully bright and clean, with no trouble. I am yours respectfully,

R. W. Barnes.

22, *Nevill Street, Southport, January* 11*th*, 1870.

TRANSPARENCIES FOR PRODUCING ENLARGED NEGATIVES.

Dear Sir,—I have not seen the enlargements Dr. Monckhoven speaks of in his reply to my letter to the News; but, presuming that they are untouched proofs, and perfectly sharp, and also that they were from a negative taken at once from a transparent positive the same size as the original negative, they would prove that the defects I spoke of in enlargements were not due to the enlargement of the structure of the collodion, but to some other cause.

I did not intend to convey the impression that transparent positives taken by contact would not be sharp, but that taking the positive in the camera would allow of its being taken rather larger than the original negative; and I am still of opinion that a sharp, transparent positive may be so taken in the camera with a double combination lens and half-inch stop on the front lens; but if a negative considerably enlarged, and that will give proofs that do not require touching, can be taken from a sharp positive the same size as the carte-de-visite negative, then, of course, my suggestions as to repeating the process are of no value.—I remain, dear sir, yours very truly, Thomas Barrett.

Mead Vale, Red Hill, 12*th January*, 1870.

INCENTIVES TO PROGRESS.

Sir,—It seems to me that a great change is necessary for the advancement of photography. The brain of the world seems to be shut up, or only giving out little bits of nothing; because—because what? It is this question that I am going to deal with.

In every studio in the world there is something turning up from time to time that is well worth imparting to others. Every photographer in the world has, from time to time, happy ideas, that are valuable if made known to others. Now it is all these somethings that turn up in the studio, and all those happy ideas that pass through the brain of all photographers, that are wanted to be laid bare, honestly, fairly, and fearlessly to the world of photographers, as it is now, with a few exceptions, as it has always been, with a few exceptions, and as it always will be, with a few exceptions. The somethings that turn up in the studio, the happy ideas that pass through the photographer's brain, are sorted, the pearl from the dross; the dross only, in some cases, finds its way into the photographic journals, and the pearl is retained in its shell.

All this happens because there is no encouragement; there is no prize awaiting to crown the worker in the studio, to crown the thinker for his happy thoughts about photography. There would be a wonderful alteration in all this were a society formed upon solid bases. Let us say that its transactions should be published, but distributed only to the members. That every member should pay, to enter the society, £2 2s., and to pay £2 2s. per annum afterwards. That when sufficient money is collected, for the best new discovery should be awarded a gold medal of the society, along with fifty guineas; for the second best, a silver medal of the society, along with fifty guineas; for the third best, a bronze medal of the society, along with twenty guineas; and for the best improvement in photography should be awarded similar prizes as for new discoveries. That the society should be universal, that its head quarters should be in London, that a subordinate office should be in each capital of all the countries in the world. Juries and all other matters of necessity would be formed according to circumstances. E.

ENLARGEMENTS BY THE MAGIC LANTERN AND PARAFFINE LAMP.

Sir,—Mr. J. Martin's communication in your last issue on the above subject will, I have no doubt, lead many of your readers to believe that enlarging with a paraffine lamp is impossible. This is by no means the case, at least with one kind of enlarging. Very good transparency enlargements in the Saronytype style can be produced with paraffine and a good lantern. Those who wish to try this method of enlarging will find they can produce a three and a half or four inch vignette head on a ten by twelve wet collodion plate, with iron development, with an exposure of seven or eight minutes. Pyrogallic development may be used, but the exposure may be calculated at about four times as long.

My lantern is fitted with three and-a-half condensor, used in connection with a quarter-plate lens. The lamp I use is known as a passage lamp, having a wick seven-eighths of an inch broad. There are only two points to be attended to in the use of a lamp of this description: first, the body holding the oil must be kept cool; secondly, the flame must be turned edge on, or nearly so, to the condensor, as the illumination is much better in this position.

J. R. Clarke.

PS.—Of course, the negatives must be thin and sharp. Solar camera negatives answer well.

Proceedings of Societies.

Bristol Photographic Society.

The usual monthly meeting was held on Thursday, December 23rd, 1869, Mr. Beattie in the chair.

The minutes of the last meeting were read and confirmed.

Mr. Gillo then read his paper on the subject of lighting for glass houses, which elicited warm commendations (see p. 7).

Mr. Ennel stated that his own paper on a similar subject had been entirely misunderstood. He entirely disagreed with the remarks of Mr. Simpson on the subject. When he worked in any glass house he should always give top front light the preference. This could be reduced into one vertical plane of glass. He illustrated this by diagrams, showing both ridge and flat roof, which, he stated, all would admit to be a good working room.

Mr. Barton stated that the light thus let in would be what all photographers desired to shut out.

Mr. Beattie explained that the light admitted as shown by Mr. Ennel's diagram would hit the floor, and be reflected from that as dirty light; he said that he entirely agreed with Mr. Gillo's paper, but preferred black walls to the dark red walls above mentioned. He had found the best glass house to be like that described by Mr. Gillo.

Mr. Ennel said he had been interrupted in his explanations. He protested against the term dirty light.

Mr. Beattie said he would illustrate the meaning by saying that in equally well lighted rooms, one painted dark would require an exposure of twenty-five seconds, whilst one painted black would but require fifteen seconds' exposure. He should use reflecting screens, such as he could have at his entire command, to obtain soft effects.

Mr. Gillo referred to his glass house, in which the experiment of light and dark coloured walls had been tried, and said he understood dirty light to be that accidental light which a face may receive in opposition to the proper light, so that it disturbs the proper effect of light and shade.

Mr. Clark referred to gradated backgrounds, which, he stated, were hard to be printed.

Mr. Gillo said they were not required to be perfect if placed some distance from the sitter. The photograph will scarcely show their slight imperfections. He had never succeeded in getting a good gradated background.

Mr. Wilcox produced pictures showing effects obtained in his glass house from side and top light.

Mr. Beattie stated that an experienced man would work well in any light, and that it was possible to change the appearance of the background by the different lights thrown on it.

Mr. Ennel stated that he had been continually interrupted, and said it would be of no use for him again to commence; he had, indeed, forgotten the chief points on which he wanted to speak.

Mr. Wilcox then inquired as to the rapidity of Mr. Ennel's glass house, in reply to which Mr. Ennel stated his glass house to be purely theoretical.

Mr. Wilcox stated that he had once entertained theoretical notions on the point, but altered them after finding them expensive.

Mr. Ennel said he believed his theory to be the best. As for reflections of dirty light from foreign objects, he could prove all that to be moonshine, not real sunlight. It is a broad light which is required, not a narrow one. In portraits taken in the open air, a blazing light is cast upon the subject; but if one side be shaded by a curtain, then there is proper light and shade. What is wanted is more light on one side than on the other.

Mr. Barton said he understood Mr. Beattie's term, "dirty light," to mean light not wanted, or antagonistic to the effect he desired to produce.

Mr. Ennel then asked if the same exposure would be required in a room with a window ten feet in size and the sitter twenty feet from it, as in a room with a window five feet in size and the sitter ten feet from it.

Mr. Gillo, in reply, remarked that light diminishes according to the square of the distance.

Mr. Barton stated that there was great absorption of light in passing through a room.

Mr. Ennel stated that there was absorption of light outside as well as inside a room.

Mr. Beattie said the nearer the object is to the window the better the light, and the farther away from the window the more the light is absorbed. He did not say do away with reflected light, but get it entirely under command. If the half shadows be obtained by a second window, they then will be broken, and not so perfect. The more light surfaces in a room to reflect light, the longer the exposure. There must, however, be sufficient amount of light to give the effect required. He believed a good north light the best; perhaps a south light would be better, but is more difficult to obtain and manage, though it is more rapid and vigorous.

Mr. Barton always believed a good south light the best.

A vote of thanks to Mr. Gillo concluded the meeting.

Photographic Society of London.

The usual monthly meeting was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, the 11th inst., Mr. J. Glaisher, F.R.S., in the chair.

The minutes of a former meeting having been read and confirmed, the following gentlemen were elected members of the Society:—Captain Turton, Mr. Peter Le Neve Foster, Mr. O. G. Rejlander, and Mr. H. Cooper.

The names of officers retiring, and proposed for election at the annual meeting in February, were read, and the auditors appointed.

Mr. Highly was prevented, by a domestic bereavement, from reading his promised paper, which was postponed, therefore, until the February meeting.

The Secretary read a brief paper, by M. Thomas Kaye, on a mode of toning and mounting collodion transparencies, having an effect resembling a photo-crayon or a photo-lithograph. A transparency, enlarged or otherwise, was obtained on wet collodion in the camera, and, after fixing and washing, was toned with a solution consisting of—

Bichloride of platinum	1 drachm
Water	20 ounces

An effect similar to mounting a print on an india tint was obtained by varnishing the plate with the following:—

Gum benzoin	2 ounces
Gum juniper	1 ounce
Gum thus	½ ,,
Methylated spirit	20 ounces

This gave a slight tint, and, by scraping away a margin through which the white paper was seen clearly, the effect of an india tint and white margin was secured.

Mr. Dunmore read a paper on two modes of producing combined negatives containing birds, &c., in conjunction with a landscape; and exhibited a good example of the result proposed. (Details in our next.)

Mr. Payne Jennings exhibited some very admirable twelve by ten photographs of Irish scenery, chiefly in County Antrim. He stated that they were produced by the usual wet process, using Mr. Dallmeyer's wide-angle lens.

Mr. H. Baden Pritchard read an interesting description of Mr. Reutlinger's studio in Paris, which he had recently visited. (This will appear in our next.)

Mr. Pritchard also made remarks on minor improvements and elements of enterprise in photography, and exhibited examples (see p. 14).

Mr. Hooper, referring to M. Reutlinger's work, said he thought much of its excellence was due to the use of a small manageable studio with a north light, and giving full exposures.

The Chairman remarked that Mr. Pritchard's suggestions showed that there was still a large unoccupied field in photography which might be profitably cultivated by energetic and ingenious photographers.

Mr. Dallmeyer next made a few observations on the subject of rapidity and angle of field in lenses, a subject, questions in relation to which often reached him. He placed on the table three compound lenses, the diameters twelve inches, and general character of the components of which was the same, but different in the amount of separation of the front and back combinations. The three lenses he exhibited would cover respectively 100°, 75°, and from 50° to 55°. It would be easily seen that rays crossing at the axis, the place of the stop between the lenses, would cover a larger space when the distance between the lenses was short, than when it was long. The relative rapidity of the lenses, expressed by the relation of aperture to focus, was 1 : 15, 1 : 8, 1 : 4, and rapidity of action was purchased by diminution of angle. When the most rapid would give a picture in one second, the next would require four seconds, and the third eight seconds. Photographers should remember that the diameter of a lens expressed nothing without a knowledge of its angular aperture.

The Chairman, in eulogistic terms, proposed a vote of thanks, which was carried by acclamation.

Mr. Mayall's presentation portrait of the President was announced as ready for publication.

After various votes of thanks, the proceedings terminated.

Talk in the Studio.

Paper Matts for Mounting Transparencies.—Mr. C. A. Fernely, in answer to the Rev. J. C. Browne, says that the matts in question are kept by Messrs. Pumphrey Brothers, of Birmingham; and another correspondent states that they are kept by Mr. Mander, of Birmingham.

Photographers' Pocket Almanac.—Mr. D. H. Cussons, of Southport, has just issued his handy little almanac for the waistcoat pocket, containing many items of information and interest for photographers.

Decomposition of Acetate of Silver under the Influence of Iodine and a High Temperature.—M. Birnbaum, after reviewing the labours of MM. Weltzien, St. Clairo-Deville, Bourgoin, and others who have experimented on this subject, states that he obtained, by causing iodine to act upon acetate of silver, chiefly two substances—viz., a fluid, and a mixture of gas, chiefly carbonic acid; the fluid is acetic acid, while among the gases elayl and acetylen could be readily detected. When the rather violent reaction is moderated, the author found that the following products are formed:—Iodide of silver, acetate of methyl, acetic acid, carbonic acid, acetylen, hydrogen, and sometimes silver and carbon. The quantities of these substances vary considerably, and it is the author's opinion that this should indicate that several reactions are going on at the same time. The reaction may be represented by the following formula:—

$$ {}_2CH_3COOAg + I_2 = CH_3COOH + CH_2 + CO_2 + 2AgI\,; $$
$$ 2CH_2 = C_2H_2 + H_2. $$

Acetate of silver, when in aqueous solution, behaves with an aqueous solution of iodine in a different manner, and the reaction is expressed by the following formula:—

$$ 6C_2H_3AgO + 6I + 3H_2O = 6C_2H_4O_2 + 5AgI + AgIO_3. $$

—*Chemical News.*

Changes in Glass.—It appears that the surface glass which contains soda undergoes considerable change after a lengthy exposure to the air. Bluish glass undergoes no such alteration, but that which has originally a greenish tinge becomes brown after a time, whilst very pure white deteriorates rapidly, showing first a yellow, then a brown, and finally a violet film. At this season of the year we do not require this additional colouring to the appearance of our already discoloured atmosphere. It has been noticed that some modern stained glass on a foggy day has almost the richness of the ancient. We need not go far for a solution of this. The old glass has acquired, in the course of ages, a film which takes the place of a permanent fog, especially on those colours which, like the ruby, are formed by a thin coating of the coloured glass on a thicker plate of transparent metal.—*Nature.*

To Correspondents.

J. T. B.—Your plan generally is excellent, and you will have abundance of light. The only objection we see is making the door in the middle of the side light, and thus, by introducing an opaque portion, practically dividing the side light into two lights. Take care to have sufficient pitch in the roof to allow water to run off rapidly; otherwise, with such a large expanse of glass, the water will find its way through the skylight in wet weather.

A New Subscriber.—Washing a plate with solution of bromide of ammonia will convert any remaining trace of free nitrate of silver into bromide of silver, which will make it keep better, and tend to secure softness and detail. Many of the modifications and details you find in our pages, you cannot hope to find in manuals, as they have only space, as a rule, for certain commonly practised processes in their most popular form.

Collodion.—The Copyright Act makes it a condition that registration shall be effected before any copies are sold. You will find it difficult to sustain an action for breach of copyright if copies have been sent out before registration.

Methylic.—You cannot copy copyright pictures in any way, or for any purpose, without obtaining the permission of the owner of the copyright. There is no obligation on the part of the owner of a copyright card to place the word "registered" or "copyright" upon it. He may do so or not, at his own pleasure.

J. P. C.—Thin, blue-looking films are generally due to the character of the collodion, and arise from the collodion being too thin, or insufficiently iodized, the former most commonly. The remedy in such case will consist in the addition of a little more pyroxyline, say a grain to each ounce of collodion. If this be insufficient, try the addition of half a grain of iodide of cadmium. 2. The method of cleaning plates given in our last is a good one. A good plate-cleaning mixture consists of whitening and a five-grain solution of cyanide, mixed to the consistency of cream. Rotten-stone and spirits of wine mixed to the same consistency, and about half a grain of iodine to each ounce, answers well. Soft, clean linen cloth, or chamois leather, first washed in water containing one ounce of methylated spirits in four of water, and then well rinsed and shaken dry, will answer well for polishing glass.

G. Smith.—We approve of your resolve to secure as good a camera and lens as possible, and the second-hand camera and lens for £5 5s. which you mention will probably answer your purpose best, and may, we have no doubt, be relied on. Upon the cost of a glass house it is more difficult to advise you, as we cannot tell what size you desire, or what space you have for the purpose. Your best plan will be to decide on the size and style of studio you propose, and then get estimates from one or two suitable builders.

Alpha.—To make a varnish with orange lac, you have simply to get a good sample of shellac, and add two ounces to a pint of methylated spirit; allow it to stand in a warm place until it is dissolved, and then filter through a tuft of cotton-wool. 2. The addition of acetic acid to the nitrate bath is attended with many evils. First of all it is unstable, a change taking place, which often induces fogging; it cannot be neutralized, for on the addition of an alkali to neutralize the acid, nitric acid and silver are liberated, acetate of silver is formed, which often diminishes sensitiveness, and, at times, causes stains. Nitric acid is not attended by any of these evils.

J. A. R. (Folkestone).—We will make enquiry as to the cause of the error. It is undoubtedly very strange, and ought not to occur.

Captain Turton.—Col. Stuart Wortly informed us, in a conversation, that he did not adhere to any proportions in the mixture, but varied the proportions to suit the subject and the result desired. An ordinary iron developer and a pyro developer being prepared, he mixed them as he required, remembering the tendency of iron to give detail, and pyro to give intensity. The primary condition to be observed is, that each solution should be fresh made; if it is not, there will be a precipitate. The mixture will keep some days. 2. The defective sensitive paper is very bad. The great fault of the Carrier paper is its tendency to give weak, feeble prints, if the negatives be not very intense. Either of the English permanent papers will give vigorous prints. 3. If hot water be used to wash prints immediately on coming from the fixing bath, the prints will be considerably reduced in depth. It is equivalent to putting them into a weak bath of hot hypo, and this would considerably reduce an over-printed impression. It would also redden the tone a little. It is a good plan to give prints a final wash in hot water, but it is desirable to get rid of as much of the hypo as possible first. The time involved in giving prints sufficient washing is somewhat troublesome; but it is not possible to avoid it with safety. Mr. Gordon was good enough to mention your name to us. We shall always have pleasure in hearing from you.

C. A. Fernely.—Thanks. We make use of the information in another column.

Mr. Rousseau.—A correspondent is desirous of communicating with Mr. Rousseau, photographer, recently of Peckham. If Mr. Rousseau, or any of our correspondents, can favour us with his address, we shall be obliged.

The Oldest Hand.—Thanks for interesting letters and examples. We will make use of the facts in our next.

E. Fisher.—The first fault in the picture enclosed arises from using a light equally strong on both sides of the sitter, which tends to give flatness. Shut out with white calico blinds the greater part of the light on one side; this will give you more relief and modelling. Also give somewhat longer exposure. The want of illumination and detail in the lower part of the dress are chiefly due to the imperfect covering of the lens, which should have a longer focus or smaller stop. You need have no scruple in asking advice; we shall have pleasure in assisting you.

A G. E.—The defect you describe is probably due to the repellent character of the collodion, and this repellent character might proceed from the solvents being too highly rectified, in which case, the addition of a drop or two of water to each ounce would have effected improvement; or from the character of the pyroxyline; or from the use of a cadmium iodizer. In either of the latter cases, ripening through age is the best remedy. The addition of a little powdered carbonate of soda, agitating, and, after a few hours, filtering, will sometimes effect an improvement, but at the risk of causing fogging, to be got rid of by tincture of iodine. It may possibly be due to the use of an old bath with considerable accumulation of ether. One aid to avoiding the defect consists in plunging the plate in the bath immediately the film is set, and keeping it moving all the time it is in the bath.

J. J. Coghill.—The address of Mr. Melhuish is now, as it has been for some years, 12, York Place, Portman Square, W. The address you mention as that to which your agent sent is 12, York *Street.* This has been the cause of the miscarriage, but one which the post office authorities ought surely to have rectified very easily. However, it will be easily rectified now. Thanks for seasonable greetings, which we reciprocate.

Several Reviews and Articles in type are again compelled to stand over until our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 594.—*January* 21, 1870.

CONTENTS.

PAGE
Combined Negatives ... 25
Printing through Ground Glass ... 26
Protecting Negatives from Injury by Varnish ... 26
The Annual Exhibition of the U.S. National Photographic Association ... 26
Platinum Toning for Collodion Prints ... 26
Critical Notices ... 27
American Correspondence ... 28
Instantaneous Photography. By W. T. Bovey ... 29
Chez Reutlinger. By H. Baden Pritchard ... 30

PAGE
Compound Negatives. By Edward Dunmore ... 31
Note on the Varnishing of Negatives. By William England ... 32
Prints and their Production. By S. T. Davenport ... 32
Correspondence.—Copyright in Photographic Portraits—Transferring Films—Church Interiors—Photographing on Wood Blocks—Front and Side Light ... 33
Proceedings of Societies.—French Photographic Society—South London Photographic Society ... 34
Talk in the Studio ... 35
To Correspondents ... 36

COMBINED NEGATIVES.

The curious controversy induced by the publication of Messrs. Robinson and Cherrill's fine seascape with kittiwakes has had the good effect of stimulating ingenuity. Much of the suggestion evoked was purely speculative, some altogether impracticable, and, very oddly, not much was supported by illustration. This was not the case, however, with all. A couple of months ago we received from a correspondent at Wick, who had written on the subject, some fine examples of combination printing, one of which, a fine sunset at sea, contained birds in flight, produced by the method he had previously described, and, at the recent meeting of the Photographic Society, Mr. Dunmore read a paper on a method of producing images of birds in flight, and similar subjects in combination with landscape negatives, which he illustrated by examples.

The plan proposed by our Wick correspondent, and which the example he forwards shows to be quite effective, consisted in producing first a negative, either from stuffed birds, or painted birds, all portions of the negative except the birds being made (by use of a white background) dense and opaque. The birds are then printed on the white paper, and the images, or, at least, the white portions of them, then covered with opaque pigment, to mask them during the printing of the landscape negative. The opaque pigment is easily removed by washing before toning and fixing, and the finished picture, if carefully done, is very perfect and effective, as the example shows.

Such a method, however, would, it is manifest, be troublesome if many copies were required, and some method of securing the combined effects in one negative is manifestly desirable in producing results for publication. Mr. Dunmore, in his paper, which will be found on another page, describes his method or methods of producing such combined negatives. In both his methods a transparent positive, obtained either from painted or real birds, is employed; the sensitive plate, which has been exposed to the landscape, is again exposed under the transparent positive of the birds, so as to receive a negative image, which is developed at the same time as the landscape. There is only one drawback to this ingenious plan, and that Mr. Dunmore indicates in his remark to the effect that the objects to be introduced must be of a lighter tint than the portion of the landscape upon which they have to be superimposed. It is manifest, in fact, that they must be sufficiently light to obliterate the impression of the landscape upon which they have to be impressed. If they have any shadow or transparent part in the negative, the detail of the landscape negative would show through the shadow, and the birds would look like airy phantoms rather than solid bodies. This was, indeed, shown in one of Mr. Dunmore's excellent examples, in which some trellis work was seen distinctly through the body of a bird. To give value, then, to this process, two precautions would be necessary: the birds or other objects should be sufficiently light and opaque to obliterate all indication of objects underneath, and, if possible, the landscape should be so chosen as to present sufficient dark space without strongly marked detail to permit other images to be impressed perfectly and solidly.

There is another and very simple method of producing combined negatives similar to those which Mr. Dunmore proposes, and which we think much more easy and convenient than either of those he has described. It is based on Mr. Burgess's plan of producing combined negatives in portraiture. In the plan we propose, the photographer has simply to select from his stock of landscape negatives such as present dark spaces suitable for the introduction of figures, either men, women, birds, dogs, or cattle. Produce a transparency, like that described by Mr. Dunmore, of the figure, photographed either from life or from a drawing, the former being infinitely preferable. Coat the landscape negative with dilute albumen, and, when dry, coat again with collodio-chloride of silver, and expose under the transparency so as to bring the figure or figures in the right spot. After exposure, fix and wash, and a combined negative, with the requisite additions, has been obtained, ready for printing.

In these plans, however, the landscape must have dark portions suited to the printing in of figures, a circumstance which materially limits the facilities of the photographer desirous of producing fine pictorial effect. A plan very briefly described by an "Old Photographer," in our issue of a fortnight ago, permits the production of more perfect combined negatives than any of the foregoing.

First, a negative of the birds, &c., is obtained, either from life or drawing, on a plate of size required, with a perfectly transparent instead of opaque background in the negative. In obtaining this negative, care is to be taken to make the background quite clear and transparent, and the figures quite opaque, by intensifying or afterwards painting on them. This plate is to be used as a mask. Then the sensitive plate, of precisely the same size, is exposed to the same figures with the same lens at the same distance, so as to get facsimile images on the plate. Now place the first obtained mask negative in front of the sensitive plate, and expose for the landscape. The opaque images in the mask negative will protect the sensitive plate in the portions which have already been exposed to the birds or other objects, and the whole being developed, a combined negative will be obtained without any phantom-like forms on the one, or any special arrangement of the subject to avoid such a result. Of course, any of the methods proposed involves some trouble and much skill and care in manipulating; but cases may arise in which the result is worth the effect. There are other known modes of producing combined negatives, but never, perhaps, so efficient as these described. The method employed in producing the picture which has originated so much discussion, and so much stimulated ingenuity, still remains a secret.*

PRINTING THROUGH GROUND GLASS.

Our esteemed American correspondent describes in his letter this week a method of printing, very much in vogue at the present moment in the United States, styled the "Berlin process." Most photographers in this country are familiar with cards and cabinet portraits of actresses and pretty girls issued by Milster, Loescher and Petsch, and others of the Berlin photographers. The singular softness and modelling of these portraits is doubtless due to retouching on the negative. The method introduced in the United States as the "Berlin process" gives a factitious softness of a character suggestive of that in the published Berlin portraits we have mentioned. It appears that the mode in which this effect is produced is another form of the plan of printing through a medium, but with a difference. The negatives are taken on glass the back of which is coarsely ground, and the roughened surface, producing various gradations of transparency, gives a soft, granulated gradation to the portrait, which is, at least, novel, and is evidently regarded as pleasing.

At present we can only conceive the character of the picture obtained, but can readily fancy that it will resemble prints we have produced by somewhat different means. We have, in the course of experiments in printing, interposed a transparent film covered with an exceedingly fine stippled granulation, something like that produced by the aquatint process, and this has produced an unusual and not unpleasing effect, giving a peculiar kind of transparency and brightness to even deeply printed images. We hope shortly to receive from Mr. Wilson examples of this peculiar gradation, and shall report further to our readers.

PROTECTING NEGATIVES FROM INJURY BY VARNISH.

We print on another page an interesting article by Mr. England, on the protection of collodion films from possible injury by varnish. He refers to those vexatious cases in which, from especial quality of the collodion, the film is either partially or wholly soluble in strong alcohol, and the negative is either injured or wholly spoiled by the operation of varnishing, a disaster the risk of which is much increased by the practice of many varnish makers of using wood naphtha largely in combination with alcohol, as aiding the latter in readily dissolving the gum resins employed.

Mr. England states that the plan he has adopted for some time past of avoiding this risk is in his experience simple, efficient, and reliable. It consists in first coating the negative with dilute amber varnish, before coating with hard spirit varnish, the collodion film being thus protected from the solvent action of the alcohol in the latter. He thinks, moreover, that the negative film is better protected from risk of splitting by changes of temperature, and on account of the "pliant elastic nature" of the intermediary film Now, as a rule, we feel satisfied of the thoroughly practical and trustworthy nature of any suggestion emanating from Mr. England, and have no doubt that this one is based upon experience and careful observation; otherwise we should feel disposed to demur, on theoretical grounds, to the argument of safety. Amber is usually hard, rigid, and unyielding, instead of "pliant and elastic," and multiplying the layers of which the completed negative is composed by the addition of a somewhat rigid film of amber would, theoretically, tend to facilitate splitting from changes of temperature and atmospheric condition. Be this as it may, we here wish to call attention to a simpler preventive of solution of the film by the varnish, and one which also serves as a preventive against the splitting of the film in drying. A dilute solution of gum has been frequently recommended, and used with great success, for both these purposes; but the application to which we now call attention is simpler still. It consists in applying to the washed and completed negative a little stale beer. The gluten present penetrates the film, and prevents splitting where there is a tendency, and it effectually checks any tendency to solution by the action of spirit varnish. This suggestion is due to Mr. V. Blanchard, who has tried it repeatedly with success, and we have verified it satisfactorily by further experiment.

THE ANNUAL EXHIBITION OF THE U S. NATIONAL PHOTOGRAPHIC ASSOCIATION.

We are requested to announce that the Annual Exhibition of the National Photographic Association of the United States will be held in Cleveland, Ohio, beginning the first Tuesday in June, A.D. 1870.

This early announcement is made to enable exhibitors from foreign countries to make shipment of their specimens in good time, which should be not later than April 1st to insure their arrival in season. Shipments may be made as late as the 20th of April, but there is a risk of their arriving too late.

Full particulars will shortly appear for the information of foreign exhibitors and others.

Those desiring special information will please address the Permanent Secretary as follows:—

Edward L. Wilson,
Permanent Secretary, National Photographic Association,
Philadelphia, Pa., U.S.A.

PLATINUM TONING FOR COLLODION PRINTS.

At the recent exhibition a single effective specimen was exhibited by Mr. Kay, of Bolton, styled a photo lithograph, the name having reference to the style and appearance of the picture rather than to the mode of production. It was a vignetted head, apparently printed on an india-tint, surrounded by a white margin. As Mr. Kay had previously explained at the Oldham Society, the picture was a transparent positive on collodion backed by white paper, but the details of production were not stated. At the last meeting of the Photographic Society a communication from Mr. Kay, giving details as follows:—

"*Size of Picture.*—For portraiture I find twelve by ten plates sufficiently large to secure satisfactory results from the ordinary carte-de-visite; but the operator is not confined to any particular size. For landscape purposes the artist may work up to fifteen by twelve plates from the stereoscopic or quarter-size negatives.

"*Collodion.*—Bromo-iodized. Any good commercial sample, with the addition of a few drops of a ten-grain tincture of iodine.

"*Silver Bath.*—Strength, thirty grains to the ounce, slightly acidified with nitric acid.

"*Developer.*—The ordinary iron developer.

"*Fixing Solution.*—Cyanide of potassium (one part in forty of water) in preference to the solution of hyposulphite of soda. After fixing, wash well.

"*Toning Solution.*—One drachm (or more) of bichloride of platinum to a pint of water. The solution is poured on and off the plate a few times until the desired tone is secured. A piece of white paper placed behind the wet transparency will enable the operator to judge of the tone.

"*Varnish.*—Most commercial high-coloured spirit varnishes, such as are used for negatives, will be found to answer. But should the operator prefer to make his own varnish, he may advantageously use the following recipe:—

---

* Since this article was written we have been favoured with an interview with Mr. T. G. Hemery, of Bruton Street, Berkely Square, who has just patented an ingenious and efficient method of producing combined negatives, which he intends shortly to introduce to the profession, for producing fine effects in portraiture and other branches of the art.

Take—Methylated spirit	1	pint
Gum benzoin	2	ounces
Gum juniper	1	ounce
Gum thus	½	„

Digest for three days, and filter for use.

"Next place a glass guage or metal matt, the shape and size of the desired picture, upon the transparency, and with a steel marker or other sharp-pointed instrument describe the shape and outline of the picture. Then clear away the surrounding film, to form a margin, with the help of a large camel-hair pencil charged with collodion, and the use of a soft cloth. Here care must be used not to encroach on the film beyond the line mapped out. The picture may then be trimmed with a penknife, placed in a frame, and backed with a piece of cardboard the size of the plate.

"*General Remarks.*—The operator is not confined to any particular method of producing his transparency; but with the iron developer great rapidity is secured—a material advantage, since transparencies can be produced at night (if desired) by ordinary gas-light, with the aid of a three and a-half or four-inch condenser, such as is used for magic lanterns. The average exposure, when gas-light is employed, is about three minutes."

The effect of the platinum toning was to produce a somewhat cold but delicate black. We hope shortly to detail some experiments in connection with this subject.

Critical Notices.

THE SUN. By Amedee Guillemin. From the French by T. L. Phipson, Ph.D., with Fifty-eight Illustrations. (London: R. Bentley, New Burlington Street.)

M. Guillemin here presents the reader with a popular and eloquent monograph, the subject of which has attracted much attention of late amongst the educated public as well as scientific readers. His former work on the somewhat more comprehensive theme of *The Heavens* having been received with much favour, is a fact which in itself ensures a welcome to the present volume. Photographers are especially concerned to become familiar with all that can be learned of the physical history and characteristics of the luminary upon which the existence of their craft depends, and although the volume under notice only makes a passing allusion to the sun's action in photographic operations, the work is admirably comprehensive, though terse, and popular in style, without being superficial. The work derives not a little value from the able elucidatory notes of the translator, which remind us that we should prefer to see Dr. Phipson producing works of his own to translating those of others, his comprehensive and sound scientific attainments and felicitous style of writing essentially qualifying him as a popular as well as trustworthy expounder of various branches of science.

HOW TO PAINT PHOTOGRAPHS IN WATER COLOURS. By G. B. Ayres. (Philadelphia: Benerman and Wilson.)

A very complete and useful compendium of instructions for colouring photographs, evidently the work of a practical man, who is perfectly familiar with the work he describes. In an early number we shall lay some extracts before our readers.

PHOTOGRAPHIC MOSAICS for 1870. Edited by Edward L. Wilson. (Philadelphia: Benerman and Wilson.)

Another year's issue of Mr. Wilson's capital annual, giving a condensation of the best photographic information issued during the past year, as well as a number of practical original articles on topics of current or permanent photographic interest. Each year's issue of the "Mosaics" improves, and this is decidedly the best of all.

PHOTO-LITHOGRAPHIC FACSIMILES. By W. Griggs. (London: E. W. Allen.)

This is an example of an interesting application of photography in which, as yet, surprisingly little has been done: the reproduction by means of photo-lithography of absolute facsimiles of scarce documents, especially of an autographic character. A deep and legitimate interest is always felt in the personal traits of great men, and few things are so essentially a part of the man as his handwriting. The first number of these facsimiles contains two poems in the fine, bold, legible hand of Burns: *Tam o'Shanter*, and the *Lament of Mary Queen of Scots*, which afford an interesting glimpse at the method of the writer as indicated by the erasures, the alterations, and additions. We shall look with personal interest for further issues, and hope to see the work a decided success.

COMBINATION PHOTOGRAPHS. By a Northern Photographer.

We have been favoured with some examples of art photography, produced by means of combination printing, from a photographer at Wick, who chooses to be known simply as a "Northern Photographer," which we regret much were not sent to the exhibition recently held in Conduit Street, as they possess novel qualities of great excellence. The *Herd Boy* is a rustic scene, the foreground of which is occupied by a boy, cutting a piece of bread with his pocket-knife, eagerly watched by a dog, which sits expectant of the coming morsel. The distance is occupied by a herd of cattle, admirably grouped and arranged by art or chance. There is admirable keeping in the whole character and feeling of the picture, the composition is very excellent, and the photography exceedingly capital. *Weel may the Boatie Row* is the title of a very daring attempt, in which considerable success has been achieved. The scene is a moonlit sea, the boat gliding a dark mass in the track of the moon's silvery light on the water, watched by the foreground figure on the shore. This is a young girl, whose profile is tipped by the moonlight as she sits in shadow amid weeds and wild flowers dimly made out in the moonlight. The sky is wild, picturesque, and dark except where rifts in flying clouds show the moon and partially lighted clouds. Altogether, the picture is very effective, and gives us much hope of more good work from the artist. *Summer*, the title of a good landscape with two young girls seated on a bank, is also good, but misses the excellence of the others. A fine sunset at sea, with flying gulls, is another effective picture. We shall be glad to see our northern friend progress in the direction in which he has already done so well.

THE YEAR-BOOK OF PHOTOGRAPHY, 1870. Edited by G. Wharton Simpson, M.A., F.S.A. (London: Piper and Carter.)

For obvious reasons, we cannot enter into any critical examination of the Year-Book of Photography; but we may, without impropriety, in announcing its issue, remark, that no previous volume of the kind that has had existence has presented such an array of original contributions, both in number, variety, and excellence, as that before us. With but very few exceptions, every name distinguished in photography is found amongst the writers of especial articles for this annual, embracing a field of interest singularly varied and pre-eminently practical. This fact we cannot fail to note, and more would be out of place in these pages.

AMERICAN CORRESPONDENCE.

The Albert Process.—Woodburytypes.—Negatives on Ground Glass.—Photographing Statuary.—Working with Brains.

So much has been written and said about the Albert process and its accomplishments, that I need hardly be expected to communicate anything fresh concerning the same. On November 30th, 1869, he was granted a patent in the United States. Considerable effort was made to sell the right of his process in this country before it was patented, Albert fearing that should he make it known before selling it he would get no price for it, for the Yankees would know all about it, and, by modifying it slightly, would patent something else and supersede him. He failed to accomplish his desire in that direction, however, and the time approached when he *must* secure his patents here if at all. He therefore made Mr. Edward Bierstadt his attorney; and Mr. Bierstadt, having secured the patents, is now busied trying to perfect a plan for working the process here largely.

I believe you have printed his foreign specifications. The great principle in the whole thing is in giving the preliminary coating to the plate as described below, by means of which the gelatine film is prevented from leaving the glass, thus enabling one to print, as he states in his specification, "as many as two thousand fine impressions, from one single plate, of uniform beauty." His process, as described, is as follows:—

"A piece of plate glass is cleaned with alcohol, and flowed with a mixture of albumen, gelatine, and bichromate of ammonia, and left horizontal to dry. When dry, it is laid with its coated side on a dark surface, and exposed, for a short time, to the light, from the side on which there is no film. As chrome gelatine becomes insoluble through the agency of light, this will prevent the moisture, to which the plate is afterwards subjected, from penetrating to the glass, and, consequently, the film will remain firmly attached thereto; and, in order that the second film may adhere to the first, it is necessary to expose it from the back, and to protect the face with a dark underlayer, which absorbs the penetrating rays as much as possible, so that it may retain its adhesive properties sufficiently to secure the second film on the surface of the first, and thus both become firmly united to the glass. After this exposure the plate is laid for half an hour in water, and then set aside to dry. These manipulations can be performed a month in advance of using if desired.

"The second step of the process consists in again coating the plate with the proper sensitive film, composed of isinglass, gelatine, chromate or bichromate of ammonia, and set aside to dry as before. When dry, the plate is ready to receive the picture, and is placed in the pressure-frame on a negative and exposed to the light, in the same manner as is done with an albumen print, except that the action of the light is watched from the back, and the plate removed at the proper moment. It is then washed in water to remove all unchanged chromates; and, to harden the film, is treated with chrome alum, chlorine water, or any other coagulating material, and then set aside to dry. When dry, it is printed from in the usual lithographic manner upon a press adapted to the process."

If Herr Albert can, as he asserts, print as many as two thousand proofs from one plate of uniform quality, his process is much more valuable than we have been so far led to believe. If it is a fact, it is strange that, by this time, we have not seen a great many more prints of large size than we have. He certainly does secure some beautiful results, and it is not fair to expect much from it, for it is only in its infancy now, and doubtless all drawbacks will be overcome in time.

Woodburytypes.—I had a pleasant surprise during the holidays in the shape of a number of glass transparencies printed by the Woodbury process *in this country.*

Mr. John Carbutt, of Chicago, whom you know is one of our most talented and useful photographers, now has the Woodbury process in working order at his studios, and his results are fully equal in every way to those he brought with him from England recently. No photographic productions have ever excelled these Woodburytypes on glass. They were pronounced, at the recent meeting of the Photographic Society in this city, to be the most beautiful pictures ever exhibited at the Society. One can hardly hope for greater perfection until we secure natural colours. There is a wide field for the process in this country, and it will doubtless soon be worked here on a large scale.

Negatives on Ground Glass.—A process is being sold in this country for securing an effect similar to that obtained by retouching or stippling the negative, and is dubbed the Berlin process. The cartes-de-visite of Loescher and Petsch, and Milster, of Berlin, from retouched negatives, have been largely sold in this country, and the method by which they were made has been much coveted.

The method I am about to describe is, therefore, called the "Berlin process," because it secures results similar to the "Berlin cartes," so called. I do not remember seeing the plan suggested anywhere, and yet it runs in my mind that I have met with the idea; if so, I will be glad if those of your readers who are posted will inform us.

The whole secret—which is being peddled out here for considerable sums—is to make your negatives on glass rather coarsely ground on one side. The film is, of course, on the smooth side, and the printing is done with the ground side out. The effect is easily tried, and, in some cases, is very soft and pretty. The process is *not* patented, for a wonder. I believe Mr. Frank Rowell, Boston, was the inventor, but some one else, not he, is selling it to others. Mr. Rowell writes me that he has practised it for some seven months with great success. I shall send you some of his specimens in my next.

Photographing Statuary.—Mr. Geo. Wm. White, Chillicothe, Ohio, has communicated to me his method of photographing a piece of statuary, in various positions, on one plate. No collection of stereographs is complete without a few slides from celebrated marbles; and, heretofore, only one view has been made of any one subject for a slide, whereas it is quite easy to secure two, three, or more, and thus enable us to admire different views of the same subject at the same time.

Mr. White takes for the background a strip of dark brown cotton velvet, which he arranges so that the lower portion covers the top and hangs over the edge of a stand or table. The image is then placed in the centre of the stand and focussed. A faint mark is made on the velvet around the base of the image, and then the image is moved to the right and left of the first position, care being taken that one should not interfere with the other. Each time mark around the base as in the first instance, so as to know just where to place it again. The first exposure is now made; the lens is then covered until the image is moved to the second place, when the second exposure is made; and so on to the end. It will be readily seen how easy several positions may be thus made. The only care needed will be to give equal exposure to each, and as the number of positions is increased the exposures must be shortened. Those who make stereographs of statuary for the trade would increase their sales by adopting this method. I enclose you an example of Mr. White's work.

Working with Brains.—No one can be more conscious than yourself—judging from your weekly "Answers to Correspondents" column—of the great extent to which photographers "work in the dark." When all goes smooth, pretty good results are obtained; but, with very many, the moment any trouble occurs in their manipulations they are at once at sea. Naturally, their first impulse is to write to the editor of their journal, and that they *do* write to him, are you not also *very* well aware?

Some time ago a correspondent wrote me that he failed to get "intensity" in his negative. He used the best of everything, was exceedingly careful and cleanly, and yet failed. I suggested the usual remedies in such cases, but without avail. I then suggested an entire change of formula, and a regular cleaning out of the dark room. That was done most intensely, but *intense negatives* came not at all. Desperation seized the poor man, and I heartily wished that I might go see him, for I knew not what else to suggest to help him. As a last resort I suggested a little more use of *brains; i.e.*, to look about and *think*, and see if the cause of the trouble could not be found. He set him to thinking, and what, think you, was the result? The trouble was found.

At his dark room window he had hung several sheets of yellow tissue-paper, which, when the sun was on the window, were pinned down over the window. When the sun had passed over, the sheets were rolled up, and a pin run through them to keep them in place. Constant pinning wore large holes in the paper, which holes admitted much light, which much light fell upon the negatives during development and *fogged* them all. This *fog* he thought was *lack of intensity!*

And now another case. A batch of prints were sent me most grievously afflicted with "measles;" sad cases, all of them. The skilful artist who produced them was in great trouble to know what caused the disease. Suggestions were made; but no, he "did everything right." He had "photographed twenty years," and yet this trouble mastered him. What was "most curious about it was that *one* part of the sheet of paper would print all right, while the other end, so soon as exposed in the frame, would behave so ugly." By a system of cross-questioning, which entailed considerable correspondence, I found out his method of working, and was thus enabled to help him. In sensitizing his paper it was his plan, after floating, to seize the sheet by the two corners nearest to him, bring it up from the solution quickly, drag it over to his clips, and, by the same corners, hang it up to dry. The consequence was the silver would run down from the upper end, and on that end the "measles" were sure to appear. A little brains would have obviated all.

There may be others who follow the same method, and although it is not new to them, they forget (and therefore I will restate) the best way to silver a sheet of paper. After floating, with the left hand seize the sheet by the corner nearest to you on the right; lift the sheet slowly until almost clear of the solution; seize the opposite right hand corner, bend it back to meet the corner in, and catch both with your left hand; lift the sheet clear of the solution, then, with the right hand, dexterously seize the corner that left the solution last, and, by that corner (turning the sheet over), hang up the sheet to try. In this way the sheet will be uniformly silvered and free from "measles."

Another example of the value of brains. I enclose you a print which looks as if it had been printed with a crape veil between the negative and paper—a sad case of crapy lines. It was caused by the photographer who produced it, and who continued to produce such without being able to tell why, by using an old sample of cotton that had become useless—almost like gelatine when placed in the alcohol and ether—and by using an excess of water to prick up his bromides with. *Brains* will do a great deal for us if we will but exercise them.—Very truly yours,

Edward L. Wilson.

Philadelphia, January 1st, 1870.

INSTANTANEOUS PHOTOGRAPHY.

BY W. T. BOVEY.

That excellent authority the Year-Book for 1870, in reviewing the present position of photography, states that the history of the art has passed into the uneventful stage—that it has acquired a steady, healthful being, and a fresh and growing development of ideas initiated years ago is the object chiefly aimed after by experimentalists who have wisely determined on making perfect the progress already achieved, both in artistic and technical directions.

To reduce to order the position of an art which has so long been unsettled by rapidity of invention and startling discovery is doubtless the best course that can now be taken. More especially is this made manifest when we consider the many valuable hints and processes which remain, like Chancery bills, filed for the examination of an indefinite future. Yet, in our anxiety to do justice to old inventions, we must not forget that a weak point exists, in the boundary of photography, which renders it most desirable that some clever experimentalist should tell himself off, without delay, to examine, and, if possible, to strengthen, the ill-guarded position which pertains to rapidity of exposure, a matter of importance so great that the brilliancy of a photographic future depends on the solution of the problem that has already received attention from every intelligent follower of the art.

I might most easily strengthen the position I am about to assume by pointing to the glowing landscapes and living pictures which so often scintillate and oscillate on the camera screen. And I might allude to the oft repeated wish awakened in the mind of the photographer, that the power was his to fix, at a flash, the restless images on his sensitive plate. But I forbear dwelling at length on matters which are so generally known, feeling assured that an instantaneous process, in the fullest sense of the term—one that needs no special lens, bath, light, nor subject—would be welcomed by photographers as a mine of unfathomable richness.

Here I pause to observe—lest it be thought by any that I have something marvellous to offer, and so cause disappointment—that I have no matured discovery to describe. I am, however, anxious to turn investigation into the only track that can hold out a reliable promise of ultimate success, which, if intelligently followed, I feel confident that an instantaneous process can be matured and brought within reach. I scarce need dwell on the advantages such a power would impart to photography in its art yearnings; yet I feel bound to remark that until a method of producing rapidity of exposure under ordinary conditions is secured, the extremes of photographic art capabilities may be measured, for nature presents her grandest pictures when all is motion, and human expression is as evanescent as the drifting clouds. Hence photographers have good reason to exclaim, "Ho! for a process of more than eagle rapidity!" For lack of which the life and action we portray is often drawn in hazy blurring.

With reference to the matter of instantaneity, I have reason to believe that had my daily routine of duties been less exacting on my time and energies, that long ere this I would have cut through the knotty problem. As it is, having advanced to a certain extent in what I believe to be the right direction, I purpose making known what I have already accomplished, and sincerely hope that the explanations I offer may induce some talented experimentalist to push forward in the direction I shall point out—a direction which, as it will be seen, is quite opposite to that taken by the many who indulge in a popular belief that the first flash of light which is brought to bear on a silvered plate creates a latent image; and that a prolonged exposure is necessary only to meet the shortcomings of our limited appliances for imparting to the latent picture a visible existence, which supposition is strengthened by the experience of dry-plate workers, who find in hot water development and alkaline developers a power which erects an image with materially shortened exposures. But ere we jump at a final conclusion that may be based on erroneous premises, would it not be adopting a wiser course if we first endeavour to trace out the reason why those modified developers I have alluded to should produce such remarkable results in dry-plate development, and to ascertain whether they cannot be made to reduce in a similar ratio the exposure of wet plates?

An explanation of the first division of our query will at once set before us the impossibility of utilizing our dry-plate experience in accelerating the exposure of wet collodion. The reasons are simply these: a dry plate is divested of the greater portion of free nitrate; more than this, the surface and pores of the collodion film are sealed in, as it were, with a coating of mucilaginous or some other organic matter. Under such conditions each atom of the silver salt is enveloped in armour, which retards the progress of the reducing agent, and, to counteract such impedition, either a prolonged exposure must be resorted to—which will enable the ordinary developer to overcome the resistance—or recourse must be had to more powerful reducing agents, which can expend their extra power on the resisting medium, so that when the silver is conquered it might deposit locally as required.

Viewed inversely, these last remarks will apply also to developers charged with gelatine, sugar, &c., for it will be perceived that the organic preservative, applied to dry plates, protects the silver, whilst organic mixtures with iron weaken the energy of the metal salt by reason of the viscid surroundings it must perforce struggle through ere it can act upon the silver, so that in both instances the organic matter serves to keep the iron and silver separate, thus acting as a retarder, which would well serve as such in lieu of the acids ordinarily applied. This view of the matter I have long entertained, and have often urged in private conversation, and I am pleased at perceiving that our esteemed Editor has recently advanced a similar doctrine. To return, however, from digression. I would enquire why the accelerating developers proved to be so effective in dry-plate photography are found so ineffective when applied to the developing of wet plates? The answer must be given thus: Because they produce immediate fogging. Again, What principles are involved in the creating of such veiling? A very clever photographer, who should have known better, once remarked that in his opinion fogging meant a state of uncontrollable sensibility. Nothing of the kind; it means an universal in lieu of a local and varying reduction of the silver salt; in other words, fogging is caused by the silver being deposited alike on all parts of the plate, not unfrequently to an extent which renders the developed image a mere phantom. (The causes which induce fog effect are various, but, in every case, the principle is one). And this last described is just the condition reached when a hot or an alkaline developer is used on a wet collodion plate, because in a moist and softened film the molecules of silver having free play, they immediately succumb to the over-pressure which the developers described bring to bear on the unprotected atoms. Hence the reason why that hot alkaline developers are useless in wet processes. Hence the reason why strong iron solutions need an acid or organic restrainer to secure those local deposits which form the silver image. Depend on it, we must not look for an instantaneous process from developers. They will never, they can never, perform the work so much desired of them. This assertion might to some appear strangely dogmatic. It will, however, be found a fact that can fearlessly provoke a challange.

(*To be continued.*)

CHEZ REUTLINGER.

BY H. BADEN PRITCHARD.*

In the show-cases of all photographic dealers, whether in town or province, whether at home or abroad, there is one name more frequently to be met with upon portrait pictures of high class than any other, that of Charles Reutlinger. Other photographers may shine in their respective and special spheres; but in regard to portraits of small dimensions, and more especially bust pictures in *cabinet-format*, the name of Reutlinger stands in the very foremost rank. His favourite style seems to be a vignetted bust, so soft and delicate in tint, so mild in its lighting, so graceful in pose, and withal so brilliant in finish and effect, that one is truly lost in admiration when turning over the leaves of his attractive albums. That his models are, as a rule, of a superior class, may to some extent account for the intellectual bearing and graceful deportment secured in his pictures, but only the practised skill of an artist and photographer combined could produce such finished results as the greater portion of his works appear to be. In regard to his great success, and how the same has been attained, we need not speculate, as in the cases of our own countrymen we know very well that eminence in their art has not been secured by the discovery of some secret dodge, or the practice of some peculiar manipulation, but rather by superior skill and knowledge of the operations they perform, and of the tools with which they work.

During a recent visit to Paris I embraced the opportunity of visiting M. Reutlinger's studio. My request to do so was heartily acceded to by that gentleman, who in a frank and kindly manner led me over his establishment, and answered unreservedly my frequent inquiries. Every room and compartment was thrown open to my view, the actual manner of posing and operating demonstrated, and the apparatus employed (very little and very simple of its kind) freely exhibited. "I have nothing special to show you; for my method of operating is that pursued everywhere else," said M. Reutlinger, with the modesty of a true artist; "there is nothing in all my studio of an extraordinary kind, *rien d'extra du tout*." My rejoinder was, "*Seulement les portraits, ils sont extras.*"

M. Reutlinger's studio is not an extensive one; but if small, it is compact. Situated in a busy part of Paris, the Boulevart Montmartre, it was necessary to build the glass room at the very top of the house to secure an adequate supply of light, and an ascent up five flights of steep stairs is therefore required to reach it. It is of very narrow dimensions, one of the sides being open to a north light; of this wall, only the upper portion is of clear glass, the lower five or six feet being dulled, and, moreover, protected by a sliding curtain in fine weather. The roof is a sloping one, and in the lower parts, where glass is let in, this is also dulled: curtain arrangements to modify the light are employed, but inasmuch as but little direct light enters, precautions of a simple character only are necessary. The roof is open only in the locality of the sitter. The room is so small as to afford but twenty to twenty five feet of working space, and one end only is fitted up for work. A simple head-rest, firm and rigid, but without any appliances for back, elbow, or neck, was used for steadying the sitters, and five or six screens of different kinds, rolled up and employed according to the judgment of the operator, served as backgrounds. The lighting up of the model was very perfect indeed, every dimple and outline of the face receiving a different shade of illumination, and the light being yet sufficiently unobtrusive as not to inconvenience the sitter even in the slightest degree.

M. Reutlinger himself personally superintends the operations, having two assistants in the studio for posing and arranging the sitter, and two more in the dark room immediately adjoining, who first coat and afterwards develop and finish the plates. Immediately behind the studio is a dressing-room, and beyond this again is a workroom for finishing and retouching the negatives and prints. The negatives appear to be of a very brilliant character, and are intensified with iron and silver, without admixture of pyrogallic acid; for fixing, hyposulphite of soda is used, the employment of cyanide of potassium being justly prohibited on account of its dangerous character. Nothing but Sochnée varnish is used, and with very good effect; the negatives are kept in ordinary wooden boxes, and packed away into store-rooms without any special care, and yet rising or splitting of the film is a phenomenon quite unknown. Either, therefore, we photographers in England use a varnish unsuitable for the purpose, or our climate is so damp and variable as to necessitate the adoption of special precautions, such as placing each negative in a separate paper packet, &c., which in Paris are unnecessary.

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* Read before the Photographic Society.

The collodion, and many other of the compounds employed, are prepared by M. Reutlinger at his own establishment, and by means of that arrangement he is enabled to rely upon the quality of his preparations, and ensure a uniform supply of them. The paper he employs is certainly of a very high-class character, and other materials used are, doubtless, of an equally superior description. For mounting, pure starch only is used, the high glaze presented by the pictures being due to the fine surface of the card upon which they are mounted, and to the employment of a powerful steel rolling press.

The operation of retouching has largely occupied the attention of M. Reutlinger, who now seems to have brought the matter to a very perfect state of success. It is rare that a portrait requires no retouching; but very little indeed is necessary in the majority of instances, excepting, perhaps, in the case of enlargements. In his finishing room, M. Reutlinger gives occupation to four or five gentlemen, all of whom are artists of some skill; several crayon sketches shown must, indeed, have been the work of a true master, so faithful were they in resemblance and so life-like in character. In ordinary portraiture, where retouching is necessary, the rigid markings and more glaring crow's-feet in the face are first removed or softened down upon the negative, and the positives are subsequently manipulated with the brush. I did not ask the nature of the retouching material; but Indian ink would appear to be generally employed. The operation of retouching is, however, by no means inherent to the success of the pictures; for many untouched specimens which I saw, and which were waiting to be worked upon, appeared, to my unpractised eyes, sufficiently perfect without further handling.

Although M. Reutlinger's studio is not wanting in any essential particular, and the necessary apparatus and appliances are well suited, or, at any rate, sufficient for the purposes for which they are used, I do not wish to convey the idea that the arrangements are all of them of the best and most perfect description. The lenses, the majority of which are Dallmeyer's, are, doubtless, of first-rate quality, and probably the best that can be had, and the same may be said of all necessaries upon which dependence must be placed: but as regards smaller matters, such as the washing arrangements, facilities in the dark room, &c., much is left undone that might be improved. I make this remark merely with a view of showing that, in order to produce good work, it is by no means essential to have a model establishment, and that any arrangements, so long as they answer the purpose satisfactorily, are all that are required. Indeed, nowhere in M. Reutlinger's studio was to be found any speciality, and his arrangements are, as he himself openly remarked, the same as one would see in any other similar establishment. If there is anything to which his success is due, beyond his own personal skill in the art-science of photography, it is probably the practice of subdividing the work, and carrying out, to a considerable degree, the method of division of labour, an arrangement he is the more able to adopt in consequence of his very large connection: it would appear probable that from the time a client enters the studio until the copies of his portrait are issued, as many as a dozen pair of hands have been occupied in the various operations necessary for the production of finished pictures. This is the only impression left on my mind of any apparent cause conducing to M. Reutlinger's success, and this even may be fallacious.

Another point must not be omitted in regard to the establishment. Although the space is confined, and sufficient room scarcely afforded for the various manipulations, a perfect system of order reigns throughout, and apparatus and appliances are not found unnecessarily encumbering the rooms. Thus, in the glass room nothing is allowed to stand except what is absolutely required for the time being, and the miniature studio on this account appears quite spacious. Without this prevailing spirit of order, there can be no doubt that so small an establishment could not be kept in good working condition, especially when it is remembered that on a fine day the numberrs of portraits taken may be reckoned by the dozen. It is truly a subject for wonder that the fine examples of the art which bear the name of Reutlinger, and are to be met with, not only throughout France, but in almost every town of importance, should be the produce of a studio so insignificant and modest in its character.

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COMPOUND NEGATIVES.

BY EDWARD DUNMORE.*

I have this evening the pleasure of introducing to your notice two methods for the production of compound negatives—a term I have applied to express that the negatives consist of representations of dissimilar objects taken at different times, but so arranged as to form one harmonious whole, and permit of being printed from as ordinary negatives.

The methods herein described are possibly not novel; at the same time I am inclined to think they are not very generally known, if one may judge from the remarkable suggestions for producing similar results which have appeared from time to time. I will at once proceed to explain the *modus operandi* to produce a landscape negative, with birds, by method No. 1:—

Strain perfectly flat and even, upon a board, white paper; thereon paint, *in reverso*, very carefully, large in size (but in exact proportion to the size of the landscape they are intended for), and in Indian ink or other suitable pigment, the birds required. This painting must now be photographed on a plate of the same size as the landscape-negative, every part of which, except that intended to print, to be made perfectly opaque, then dried and varnished in the usual way.

Now, with a *dry* plate, photograph the landscape; *but before development*, place it in contact with the negative already taken from the painting in reverse, in a pressure-frame carefully protected from the light. Expose the whole, as in ordinary printing, to direct but weak light for a second or two (according to circumstances), remove to the dark room, and develop as usual. This constitutes process No. 1.

Plan No. 2 is similar: but instead of *painting* the subject *in reverso*, photographs are made from the reality, and printed, cut out carefully, and gummed on to a large sheet of black paper. Of this a negative is made; from it a *transparent positive* is taken and dried. Preliminary operations now being completed, a landscape is photographed on a wet plate; afterwards on the same plate, before removal from the dark slide, a copy of the transparency; then develop, dry, and finish.

By both schemes it is evident that, in order to get the *best* results, the objects to be introduced must be generally of a *lighter* tint than the negative upon which they are to be superimposed. This is more necessary in the last than in the first plan, where some little licence is allowable; for the image produced by direct printing is of a much more intense character than that produced by the lens, and seems partially to obliterate the image upon which it is impressed and superimposed.

I will now pass round for your inspection and examination negatives so made, but for which I must beg you to make considerable allowance, as they are merely experimental plates, made in wretchedly "unphotographic" weather.

In No. 1 process I used a wet plate instead of the dry one I suggest, which necessitated a slight separation in printing the birds, and consequently loss of definition. However, the same principles are involved, whatever the picture may be, and will serve to show an easy and simple expedient, which may in some cases be found useful in photography.

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* Read before the Photographic Society.

NOTE ON THE VARNISHING OF NEGATIVES.

BY WILLIAM ENGLAND.

The varnishing of negatives is a subject to which too much attention cannot be paid. Not only is a varnish necessary which shall be a sufficient protection to the negative when in the printing-frame, but it is also requisite that the coating-material should be incapable of exerting an injurious action when applied to the film.

The argument may be advanced that, inasmuch as only a very few mishaps occur from time to time with the varnishes at present in use, the matter is not of sufficient importance to warrant special attention; my own experience is, however, to the effect that many valuable negatives have been more or less injured by adopting a defective mode of varnishing, and that the application of strong spirit varnishes to some kinds of collodion films is attended with considerable risk. Sometimes the varnish, especially if the negative has been much warmed, will dissolve the film entirely from the glass, while in other and more numerous instances the shadows only are attacked, but these in so decided and vexatious a manner as notably to reduce the value of the plate. These disastrous effects may either be the consequence of the employment of too soluble a variety of pyroxyline in the preparation of the collodion, or may happen as the result of under-exposure and necessary prolongation of the development, when the shadows are very liable to be attacked. At the present time, when negatives are often priced at scores of pounds, it is a matter of grave consideration that no accident should attend the final manipulation of the plate, but that every precaution be taken to ensure its perfect preservation.

The method I have adopted for some time past is simple, efficient, and reliable; and if not novel, is still, I believe, not very well known. It is to flood the negative, in the first place, with dilute amber varnish, and, when dry, to coat it with ordinary hard spirit varnish; by this means the latter does not come into direct contact with the collodion film, and the alcoholic solvent is therefore without any action upon the same. Moreover, double protection is thus afforded to the negative, and, from the fact that the intermediate varnish film is of a pliant and elastic nature, there appears to me less chance of any injury resulting to the negative from change of temperature, splitting of the film, &c. The amber varnish does not attack the negative film, by reason of the solvent employed (chloroform) being incapable of acting upon collodion.

I may also remark that where it may be desirable to add to the durability of a negative—such, for instance, as when a large number of copies are wanted—it will be found an advantage to dissolve in the ordinary spirit varnish a small quantity of shellac, which will tend to give a harder and more durable coating to the negative. The brown or orange shellac, not the bleached quality, should be used; the former makes the varnish somewhat darker in colour, but this is of no consequence.—*Photographic Journal.*

PRINTS AND THEIR PRODUCTION.

BY S. T. DAVENPORT.*

Processes of Engraving.—It is not necessary that I should repeat here what I have already given in the Society's Journal,† viz., a detailed account of the various processes employed in the production of engravings; it will be sufficient, for my present purpose, that I should enumerate them. The processes chiefly used at the close of the last and commencement of the present century consisted of:—

Wood engraving, of which the earliest-known print bears date 1423.

Line engraving on metal plates, which appears to have been practised in England as early as 1284; and the art of etching, which is now combined with it, is attributed to Albert Durer, and dates from the beginning of the sixteenth century.

Chalk, or stippled engraving, a process which seems to have been first introduced in France.

Mezzotinto, a process which is attributed to Prince Rupert; but the credit of the invention appears more properly to belong to Louis von Siegen, and dates from about 1643. And

Aquatinta, a process which was soon extensively used.

The chalk, mezzotinto, and aquatinta processes, but more especially the two last mentioned, afforded great facilities for the production of broad effects spread over large surfaces; but the refinement, gradation of light and shadow, and force of artistic effect produced by the mezzotinto process led to its general adoption in the production of portraits, while the aquatinta process was more generally made available in landscape scenery on a large scale; but neither of the processes were used, to any great extent, as a means of illustrating books, as, in the first instance, the surface of the engraved plate rapidly wore away in the process of printing, and, in the latter case, in addition to wearing readily, there was a want of fitness for the production of minute detail on small surfaces.

Many other processes were subsequently invented and used, and are fully described in the paper before referred to, and prints obtained from such plates are exhibited; but time will not permit of my now dwelling upon them.

Hogarth employed the process known as line engraving, which, at that time, was executed on copper plates, and the success of his publications led to his employing, between 1733 and 1750, a large number of engravers, and the development of much native talent; and portrait painters soon began to exhibit in print-shop windows portraits of distinguished persons engraved after their own pictures.

In 1741 Boydell began to publish a series of views in and about London, drawn and engraved by himself. The success of this work led him to extend his plans, and to his employing Bartolozzi, Basire, Walker, Erlam, and other engravers, on plates from pictures by celebrated masters. From 1750, the works of Rooker, Strange, and Woollett, as engravers, began to command attention; and, in 1752, Dalton commenced his career as draughtsman, engraver, printseller, publisher, librarian, &c., to George III.; and, in the production of his work on Greece and Egypt, he employed the talents of Basire, Mason, Chatolan, Vivares, and others.

The engravings thus issued to the public, the action taken by artists themselves (who had now established an academy in St. Martin's Lane), the establishment of the Society of Arts, and other circumstances, ultimately led to a more general recognition of art and artists, and to the establishment of exhibitions of pictures in London, and the creation of the present Royal Academy. After the creation of the Royal Academy, the Society of Arts, which had previously paid considerable attention to painting and sculpture, directed especial attention, through its Committee of Polite Arts, to improving the arts of engraving, and the materials on which, and the ink in which, the prints were produced.

A taste for art had been developed in the minds of the people; the knowledge of and love for art continued steadily to grow, and was greatly extended by the productions of West Reynolds, Gainsborough, Wilson, Barry, and others. So great was the success of some of those who had entered on the dissemination of prints by means of engraving, that the sanction of Parliament was obtained by Alderman Boydell, in 1804, for the disposal of his property by lottery, "he having, at that time, expended in promoting the commerce of the fine arts in this country above £350,000."*

It was soon found, however, that the cost of producing engraved works on a large scale, and of a high class, not only involved a large expenditure of time and capital, but that the expense of printing was a serious charge upon the production of largely illustrated works. It was also impossible to obtain from copper plates perfect impressions in large numbers, owing to the wear of the work in the process of printing. An enormous trade had now been created by the issue of illustrated editions of celebrated English works, and it was sought to raise magazines in public favour by embellishing them with engraved portraits, views, maps, &c.

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* Continued from p. 21.

† See Journal, vol. xiii., p. 131.

* See "Annual Register," vol. xlvi., page 366.

To overcome the difficulty in the way of obtaining an increased number of perfect impressions, engraving on steel was introduced. Previous to the introduction of engraving on steel, the designs executed for the embellishment of our literature, as also many of the portraits then published, were of a decorative character; but, with the introduction of steel plates, the ornament was given up, and a diminution in the extent of surface covered by the engraving became, in the first instance, a necessity, as steel was not only more difficult to work than copper, but the best method of acting upon it with acids had not been found out. Some of the finest examples of prints from engraved steel plates will be found among the works of Warren, Heath, Pye, the Findens, Rolls, Lekeux, and others, and were published in the annuals and other gift-books issued at the beginning of the present century. It is to be regretted that many of the best works produced and executed by a generation of artists and engravers now passed away are shut up in books which, in the present day, are all but unknown, except to collectors.

(To be continued.)

Correspondence.

COPYRIGHT IN PHOTOGRAPHIC PORTRAITS.

Sir,—In the approaching session of Parliament, most probably, a new copyright bill will be introduced; therefore it is time that photographers should be stirring in the matter, and endeavour by some concerted action to obtain a recognised legal property in their negatives without so much trammel and expense as is involved by the present Act. The extent to which copying is now carried on is fearful, and will, if not checked, have the effect of shutting up good photography in the country, especially in small towns. For consideration I suggest the following points.

That all photographers working for profit should be annually registered, with their addresses and particular trade mark, which might be a monogram or some other suitable device; the fee for this might be a guinea, or, if that is thought too much, half a guinea; even at the latter sum, there is no question that a sufficient sum would be raised to cover all the expenses of a government officer especially for the purpose, not in connection with Stationer's Hall, but the Board of Trade.

That all photographic prints which should bear on their face the registered trade mark of the producer of the negative should be deemed as copyright, any infringement of which should be visited by penalties. Of course, where a photographer's assistant took or produced the negative, the copyright should be vested in the employer. Persons trading in or in possession of infringed copyright prints should be held liable for the penalties of infringement. Persons using any trade mark for copyright without registration or annual payment should be subject to a penalty. Provision should, of course, be made as to the manner by which the penalties should be recoverable.

In suggesting the foregoing, I do so for the purpose of setting the ball in motion; and the ideas of others might keep it rolling, until some good and definite subject matter was settled for the purpose. Get the action of the Councils of the Photographic Society and the Society of Arts invoked. Photographers in their districts should unite and endeavour to gain the sympathy and support of their representatives in the Lower House of Parliament on the subject.

J. C. S.

TRANSFERRING FILMS.

My Dear Sir,—I do not think that Mr. Duncan is quite correct when he states that "the present methods of making inverted negatives are both troublesome and unsatisfactory." I think nothing can be more simple or effective than the method of transferring by means of gutta-percha dissolved in benzole. The collodion film is removed from the glass without risk, and, being perfectly transparent, can be used for printing in reverse, and can also be kept without risk in a book between blotting-paper. The very thin pink sheet gutta-percha should be employed, and this should be torn into strips, and then cut into small pieces with scissors. A bottle should be three parts filled with these pieces, and then filled up with benzole. This, being shaken occasionally, will dissolve the gutta-percha, and when all is dissolved, and the colouring matter has settled, the clear portion should be decanted; this, if of the proper consistence, should become a solid white mass, and, when required for use, should be dissolved by placing the bottle in hot water. The varnished negative being placed on a levelling stand, the gutta-percha solution should be poured on until there is sufficient to cover the plate so as not to flow over the edges; then, being left for a minute or two, the residue should be poured back into the bottle from one corner. The glass should then be held either before a fire or over a lamp, protected from the flame by "tale," until the gutta-percha has set transparent, and then, when quite cool, the plate should be plunged into cold water, when the film will be found to leave the glass readily. The film is tough, and may be handled with ordinary care without risk. If this plan of coating the negative with a film of gutta-percha has not succeeded, I think it has been owing to one or both of two errors: pouring off the gutta-percha solution too soon, so that the film is too thin; and allowing it to set without heat, which makes it opaque.

I think it is to be regretted that M. Grune was compelled to discontinue his experiments in the direction of the reproduction of natural colours by photography. As yet he does not appear to have advanced beyond MM. Niepce de St. Victor and Becquerel; but an enthusiastic experimentalist might do a great deal towards solving the problem. For instance, he might try the experiment of painting the colours of the spectrum in bands upon a white enamelled surface, and, by placing a white sheet between it and the sun, produce a great amount of white light. But even if he succeeded in reproducing the colours of the spectrum on a silvered or a collodion plate, that would not be sufficient, for it must be borne in mind that it is not only all the colours of the spectrum that we have to reproduce, but the endless modifications of each colour as we see them in nature. The transmission of light through a highly coloured medium is a very different thing to the colours, say, of a landscape being reflected through the lens, even supposing the light upon them to be brilliant.—Believe me, my dear sir, yours very truly, Thomas Barrett.

Mead Vale, Red Hill, 18th January, 1870.

CHURCH INTERIORS.

Sir,—As I have received many very useful hints from your numerous correspondents, I beg to return my thanks in a practical manner by giving the results of an experiment I have recently made.

A few days since I received an order to take an interior of a small country church. As usual, the photograph had to be taken from the west end, to show the Christmas decorations in the chancel and on the pillars of the nave. I gave what I considered about the right exposure—viz., forty-five minutes—and, on developing, I found the centre of the plate smothered in fog, evidently caused by the immense amount of light coming in the east window, a very large one of white glass. Only the chancel was buried in fog, the other parts being as clear as could be wished, and properly exposed. I tried again, giving only half the exposure; the result was quite as bad, from the fact of the greater part being under-exposed, and the centre again fogged. Of course, I knew neither would do, as all the decorations on the reredos and alter were invisible; so I returned home to think of it.

After a little cogitation I decided to try my hand at making a *stained glass* window of that large white glass one. I mixed up about half a pound of whiteuing and three or four ounces of powdered green colour with water to the consistency of thick whitewash, and sallied forth once more. With the help of a large paint-brush and three ladders, in the course of half an hour I managed to cover the window all over with this composition, shutting out quite three parts of the light from the window.

I again exposed a plate, and the resulting negative was all that could be desired, the light from the other windows, not directly facing the camera, nicely illuminating the chancel.

If this hint should be of any service to any of your numerous readers, it will afford me great pleasure.—I am, sir, yours obediently, W. R. Church.

Calne, Wilts, January 18th, 1870.

PHOTOGRAPHING ON WOOD BLOCKS.

Dear Mr. Editor,—Although Mr. Bovey has kindly given us some instruction on the above subject in your newly issued Year-Book, I make an appeal through your columns for more information on this very important matter, as photographers somehow do not seem to be aware of the immensity of the field of labour awaiting a process of photography on wood blocks, suitable at once for the hands of the engraver. Mr. Bovey's method is so far good, but it is impracticable, unless a special negative be taken "through the glass." This, however, besides being circumscribed, is troublesome. I am not sure, however, but printing through the glass with a direct light would suit some subjects; but what is more particularly wanted is a process for taking a positive picture on the wood direct in the camera, or from a transparency from a negative. One could easily darken, without ultimate damage, the surface of the wood, to make the picture look in true light and shade; so the question narrows itself into this: What is the best vehicle for the purpose? In the first place, it must be thin enough to prevent its subsequent interference with the fine lines of the tint tools; and, secondly, it must be of a nature that will not "chip" while under the pressure of the graver or scooper.

A glimpse of the value of such a process may be had when one considers that the most important fact about wood engravings is that they can be produced along with letter press. This is a wood block speciality, and so let experimental photographers give the subject their consideration, as the attainment of such an object is sure to widen the applicability of photography amazingly.—Yours, &c.

John Patrick.

Wemyssfield, Kirkcaldy, January, 18th, 1870.

FRONT AND SIDE LIGHT.

Dear Sir,—I have read from time to time remarks on erecting and building photographic galleries. I myself have had some experience, and quite agree with your remarks in your last. The ridge roof, angle 45° to 50°, is best, and if the tunnel shape be used, the front light should be 60°, facing N.N.E., getting partial north side as well; unless the west is screened, and the width of room be sixteen feet to eighteen feet, then you can command a general or various kind of light. I fully understand your correspondent's (Ennel's) ideas on lighting. Of course, the glass is in front, yet, when working, the blinds are drawn, and the light becomes high side; and the great mistake in building the tunnel-shape is, the angle is in general too flat—less than 45°, and, in some instances, 35°. But pitch 50° or even 60°, then see your lighting. I also send you an album for inspection, all taken in the much-condemned—I will not call it front light, because is is not so—high side light. Lux et Salus.

January 18th, 1870.

[The cards sent contain some excellent examples of lighting.—Ed.]

Proceedings of Societies.

French Photographic Society.

A meeting of the Society was held on the 3rd ulto, M Peligot in the chair.

M. Blanquart Evrard presented the Society with a copy of a work recently published by him, and entitled *Le photographie, ses origines, ses progres, ses transformations.* Illustrations of the most important mechanical processes find a place in the book.

The Editor of the Medical Record forwarded a copy of that journal, containing a photographic illustration of a medical subject.

M. Despaquis addressed the Society on the question of producing moulds and counter-moulds by photography for embossing, &c., denying that M. Placet had any claim to be considered as the originator of these applications of the art. M. Poitevin, in 1855, seven years, theretore, before M. Despaquis, took out a patent, of which the following was the title: "Process for producing by the action of light, and without employing the method of etching by acids, or that of engraving, reliefs and intaglios capable of being transferred to metal for typographical printing, engraving, &c."

M. Poitevin forwarded a communication to the Society, as follows:—"For some time past I have been aware that M. Albert, of Munich, has been producing mechanical prints in greasy ink by means of glass plates prepared with bichromated gelatine, and I have been very pleased to hear of the great success he has achieved in this direction. In perusing the last number of the *Bulletin*, and likewise the article in the Photographic News, describing the method employed by M. Albert, it was with feelings of great regret that I found he had given the name of Alberttype to the process. Whatever the exact nature of the material may be which is employed with more or less advantage as a basis, the fact cannot be disputed that the production of a photographic impression from a film of bichromated gelatine or albumen by means of a fatty ink is my invention, and the French Photographic Society has confirmed this by awarding to me, after a careful examination and prolonged competition, the prize instituted by the late Duc de Luynes; other honorary distinctions have likewise been accorded me for the same invention. I therefore take this opportunity of protesting most energetically against the unjust pretensions, if I may use a stronger term, of M. Albert of Munich, in giving his name to this method of printing, which he has merely perfected, and from which he is sure to derive considerable advantage."

M. Poiree made some remarks on the subject of reproducing colours in photography, in the course of which he referred to the results of Newton and Brewster, and took exception to the recent essays on the subject by M. Ducos du Hauron and M. Cros.

MM. Schaeffner and Mohr communicated a recent improvement in printing with carbonate of silver paper. Instead of fuming with ammonia the pads from the printing frames, as formerly recommended, it is now stated to be sufficient to treat the silvered paper only with ammonia fumes for the space of twenty or thirty minutes, placing it immediately afterwards in the frame, and covering it with parchment paper to prevent evaporation. The paper before fuming will keep good for any length of time if preserved in an obscure locality, neither too dry nor too damp.

M. Marion exhibited an improved photometer constructed for the purpose of carbon printing.

M. Peligot described the experiences of MM. Gaffield and Bontemps, in reference to the colouration of glass, and exhibited specimens of glass in its original state, and of the same material after exposure for certain periods of time to the action of light.

M. Gaffield likewise showed some specimens in connection with the same subject.

M. Jeanrenaud communicated some further improvements which he had made in carbon printing, and more especially in regard to the employment of albuminized paper and cyanide of potassium in connection therewith. The cyanide of potassium is used in the form of a dilute solution for the purpose of bleaching or weakening prints, which could not safely be treated further with warm water.

M. Arosa exhibited some prints produced by the process of

MM. Tessie du Motay and Marechal, of which he is at present the proprietor. The prints were shown for the purpose of refuting the opinion recently expressed that the number of prints capable of being produced from one plate was very limited. M. Arosa stated that a work recently issued by M. Gaffier contained two hundred and fifty prints from one plate, which was capable of yielding several thousands.

M. Davanne presented the first part of his report on the recent exhibition.

The President then made a few remarks relative to the Exhibition for 1870, and the proceedings terminated.

South London Photographic Society.

This Society met on the 13th inst., the Rev. F. F. Statham in the chair.

Messrs. W. C. Morgan and George Croughton were elected members.

There was submitted for examination a camera by Rogerson, of Manchester, which the Secretary said was made by machinery, and which was inspected by the members with expressions of approval.

A pocket almanac by Mr. Cussons, of Southport, was presented to each member present.

The President then announced that the subject for discussion that evening was "The best way of vignetting portraits."

Mr. Blanchard said that he had tried various ways of vignetting. One great difficulty consisted in getting the assistant to carry out the ideas of the principal, who, after taking pains to produce a good model to serve as a guide, was generally disappointed in finding that so few out of a thousand prints were properly vignetted according to the pattern. One method that he had some time ago suggested consisted in pasting a piece of transparent tracing paper on the back of the negative, and then working it over with a crayon stump. By this means they could indicate exactly the amount of the picture they wished to be included, and could vignette it off with the softest possible gradation. The drawback to this method was, that the tracing paper, at first transparent, became opaque after being in use for some time. Another method of vignetting that had been employed by him was in using the ordinary vignetting glass, with this difference, that transparent paper was pasted over certain portions, so as to soften down the drapery, and make it merge away into whiteness. In the hands of an intelligent person, cotton-wool was a most effective agent in the production of fine vignettes, for any effect wanted could be obtained by its agency. It should, however, only be used by a person of taste. Vignette printing in the hands of ordinary printers was a source of great annoyance. He had also tried, with good effect, a piece of soft and rather thick wood with a central aperture very much bevelled off underneath.

Mr. Henderson said that vignetting glasses with the softest possible edges might be obtained in the following manner:— Put a piece of sensitized paper in a printing-frame, then cut, in a piece of card, an opening of the shape required, and place it over the printing-frame. While the light is acting on the sensitive paper through the opening in the card, move the latter about so as to prevent a hard, sharp edge being formed; and, in this way, a black oval or other shape is obtained on a white ground with an exceedingly soft edge. When this is fixed it may be used in the production of vignetting-glasses of any desired size, which may be obtained by means of the camera and wet collodion. Glasses so produced were, in his opinion, much superior to those which were now in the market.

Mr. Sebastian Davis described a method of using cotton wool for softening the outline of the vignette which was not liable to be altered by the wind or by an accidental touch. It consisted in having two sheets of card perforated with an aperture of the required size, and an edging of cotton wool, kept in its place by being pinched between both. By an obvious arrangement a mask of this kind, when placed outside of the glass in the printing-frame, could be shifted until it covered the exact portion of the negative required.

A general conversation on the subject of vignetting took place, Messrs. Howard, Taylor, Cocking, Lane, Croughton, and Foxlee taking part in the same. In course of this, allusion was made to the beauty of the vignettes of Mr. T. R. Williams, and the fact that masks of cotton wool were employed in their production; that the efficiency of the portraits of M. Reutlinger was marred by the abrupt vignetting; that smoking of the back of the negative had been employed by some to produce "effects," and that in some cases the heat to which the negative was subjected, consequent upon its being smoked on the back, had rendered the negative weak and thin.

A vote of thanks was awarded to Mr. Rogerson, of Manchester, for the exhibition of his camera, and to Mr. Blanchard for opening the discussion, after which the proceedings terminated.

Talk in the Studio.

Mr. Hubbard's "Stolen Moments."—We have just had an opportunity of examining the recently produced copies of this charming combination photograph, and comparing the result with that exhibited in Conduit Street, in which, being the first print obtained from the negatives, a slight error of perspective was apparent. This no longer exists, and, by a little contrivance, Mr. Hubbard is now able to secure prints in three instead of four printings, and has so been enabled to reduce the price, as will be seen on reference to our advertising columns.

Simplified Field Manipulation.—Mr. Gulliver has favoured us with some charming little landscape bits as illustration of the results obtained by the method he described in our last. Nothing could be better.

On Volcanic Theories.—We note that Mr. Mayall, M.R.I., delivered a lecture on this subject on the 13th, before the Brighton and Sussex Natural History Society.

O'Neil's Formula for Collodion.—The following formula, says a correspondent of our Philadelphia contemporary, was given to a novice by Mr. Hugh O'Neil, the celebrated manipulator of the establishment of Fredericks and O'Neil, of New York:—

Ether	6 ounces
Some brains	
Alcohol	6 ,,
Some more brains	
Cotton	72 grains
Some iodide	
A little more brains	
Some bromides and a large quantity of brains	

After the above is all dissolved and settled, add enough brains to make good negatives.

Remounting Coloured Prints.—Every dealer in mounted and retouched prints is aware that the prints, by frequent handling, become soiled, and, in consequence, the pictures have to be sold at a reduced rate. It becomes a matter of importance to find means to detach such retouched prints from their mounts in such a manner that the retouch shall not suffer by it. Mr. Grasshoff has accomplished this by covering the picture with diluted plain collodion, and then places it in hot water, to soak it off the mount. The collodion protects the retouch, and is simply laid on with a broad brush.—*Philadelphia Photographer.*

Mounting Material.—Another correspondent of the same Journal says:—"To make a paste to mount photographs: Take half-ounce best white glue, one ounce starch, half-ounce acetic acid, half-ounce alcohol; soak the glue over night in cold water, then mix the starch in a little water and add the acid and alcohol. Add these to the glue, put in water to make one pint, and boil gently twenty minutes. Always use it a little warm. It will not curl the cards as much as starch paste, and will not injure the glass of the albumen." The Editor rightly adds: "Acetic acid is very objectionable and unnecessary, and should not be used. It will cause the prints to discolour in a very short time."

Wrinkles.—Mr. A. F. Clough says, in the *Philadelphia Photographer*:—"I use fine beeswax to protect my plate-holders from the action of the silver solution. Warm the holder and wax, and rub the latter in with a piece of wash-leather. Thus protected the solution will roll off the holder in drops. For mounting prints I use equal parts of bonnet glue and gum arabic dissolved in hot water enough to make it as thick as ordinary mucilage. Strain through muslin. When cool it will be about right to use in warm weather. In cold weather it will need to be slightly warmed. A few drops of alcohol will keep it from changing. It dries quickly, and leaves the cards flat and elastic. I also use beeswax for coating my india-rubber bath. I use a swab to rub over the wax warm. Asphaltum varnish can also be used for the same purpose. I have been experimenting with a diaphragm with a crescent-shaped opening, by which I shade the sky and the centre of the picture. Would like to hear of other parties trying it, and how they like it."

To Correspondents.

X. Y. Z.—Pure chloride of silver contains about 75 per cent. of its weight of metallic silver, from which fact you may estimate its value. 2. It is not soluble in nitric acid, but must be reduced to the metallic state before it can be converted into nitrate of silver. 3. Iodide of silver in a bath would be thrown down if the nitrate of silver present were precipitated as a chloride, because, as the chloride is precipitated, water only remains, and the iodide of silver which remained in solution in the nitrate solution will not remain in solution in water. 4. We cannot give you definite information as to the cost of a press for stamping medallions.

E. H.—You can protect a design by registration, but such registration will protect the design only, and not the photographs which may be mounted in conjunction with it. The copyright in a design is preserved by once registering, no matter how many different photographs may be issued with it. The protection may be obtained by registering at Stationers' Hall, under the Copyright Act, for which the fee is one shilling. 2. Pure wax is not very soluble in ether; about four or five grains to each ounce may be held in solution.

W. W.—It is difficult to advise generally in individual cases, so much depends upon circumstances. We can give you, however, data for your own guidance. We know that many of the first portraitists are, at the present time, contemplating and preparing for the adoption of carbon printing in place of silver printing, and we believe that those who first adopt this mode of printing will make profit and position. If we were commencing business, we should undoubtedly print in carbon. The Manual will, we believe, be issued shortly. We have seen many carbon prints which were, in every respect, equal to the best silver prints, and quite equal to those you enclose.

H. M.—The Ferrotype process is simply the process of producing collodion positives, using black enamelled iron plates instead of glass backed with black varnish. The plate is coated with a positive collodion excited in a bath slightly acid with nitric acid, and developed with an iron developer, the development being somewhat rapidly conducted, and not carried so far as for a negative. 2. It may be varnished with any varnish, but that most commonly used is known as crystal varnish, and consists of gum dammar dissolved in benzole. 3. Ferrotype plates are very little used in this country, but it is possible you may be able to obtain them of some of the photographic dealers. The varnish is kept by most of them.

B. Magis.—Much depends on circumstances as to whether it is better to produce large pictures direct or by enlargement. Up to twelve by ten, or even fifteen by twelve, portraits may be taken direct with advantage. But there are many advantages obtained on taking small negatives, and subsequentally enlarging them. Where a large business is done, the work is much more rapidly effected when small negatives are produced, the sittings are much shorter, and variety of effect can be more easily secured. If the plan of camera printing on collodion be adopted for enlargements, the result is good, and easily obtained. For certain classes of pictures, however, especially the class which has been styled Salomonesque, direct work is better than enlargement.

G. P. W.—Works on chemistry abound; but much depends on your special want as to what will suit you best. Bloxam's is an excellent work. Nothing is more handy as a book of reference than Fownes' Manual of Chemistry. Brande's Chemistry is also excellent. There is no work on the reduction of residues published in this country, but many articles on the subject have appeared in our pages. We are glad that you are so well pleased with the Year-Book.

H. C.—The only occasion when opportunity occurs of examining results of the different dry-plate processes is at the Exhibition of the Photographic Society in November. 2. Cook's apparatus for exposing several plates in succession can be seen at Mr. C. E. Elliott's photographic establishment in Jewin Street. 3. There will not be another photographic exhibition in London until November. 4. We do not know of anyone who prepares plates by Mr. Gordon's process or the coffee process commercially. The Liverpool dry plates are the best commercial plates we know.

A. Z.—The addition of a few drops of carbolic acid to a solution of gelatine will preserve it from decomposition.

A. B.—Chloride of silver is generally cleansed from impurities by washing it, and care should be taken not to allow it to become mixed with impurities not removable by washing. Kaolin should especially be carefully kept from it, as it cannot be removed by either water or acids, and, if present, materially interferes with the reduction in the crucible. If kaolin in large quantity get mixed with chloride of silver, the best plan is to dissolve the chloride in hypo, filter, and precipitate as a sulphide.

J. B. Mackenzie.—Thanks for your opinion and the suggestion which accompanies it. The matter shall have our careful attention.

Citric Acid.—A simple iron developer containing twelve or fifteen grains of protosulphate of iron and about twenty minims of glacial acetic acid will answer well for white draperies. 2. Choose a fine bright day, use the lens with a large aperture, chemicals in good condition, and a fifty-grain developer, and you may probably secure the view in question instantaneously. 3. As a rule light objects appear during development first; but if the detail in dark objects come out so slowly that the lighter objects become too intense before development is completed, either the lighting, the exposure, or the developer requires modifying, or, possibly, all of them. The most common cause of the defect is under-exposure; try, therefore, giving fuller exposures. We shall have pleasure in seeing some examples of your work.

G. R. thinks the "Old Photographer," in questioning the claims of American photographers to anything great in photographic discovery, must have overlooked the fact that some have photographed the invisible, and produced portraits of ghosts. Of course our correspondent is indulging in badinage, but it should not be forgotten that American photographers generally have repudiated this imposture.

James Watson.—The value of negatives depends upon two conditions: they may be valuable in themselves, as producing saleable prints, or they may be valuable as a means of securing a connection to a business. Unless the negatives possess one or other of these sources of value—the extent of which must be a matter of calculation—they cannot be valued at a much higher rate than old glass.

J. C.—The paragraph to which you refer is accidentally misplaced; it refers to collodio-chloride prints. The mixed toning and fixing bath usually gives pleasing results, but there is some doubt as to whether the highest degree of permanency can be so secured. 2. Only four or five grains of wax are soluble in an ounce of ether, so you cannot well get too much. 3. The "squeegee" is an elastic scraper of vulcanite. 4. We believe that a few copies of the Year-Book for 1869 are still in the hands of the Publisher. 5. The wax would set in an uneven wave or ridge.

Cymro.—For ordinary effects in portraiture the light on the north-west side and roof will be sufficient, but it will add to your facilities for varying your lighting, and occasionally aid you in getting detail in shadows, if you have a little glass on the south-east side. This might be kept permanently stippled, or merely covered with a blind, as you choose. The general proportions and plan you propose are good, and you will doubtless work with much more satisfaction than you have done with your front light.

Anxious.—The general plan and proportions of your proposed studio are excellent. We anticipate the best results in it; you will possess a great power of regulating the amount of top light falling on the sitter from placing him further backward or forward under the dome-shaped end. 2. It is probable that the glass at *c* will at times be useful, but it should be stippled, and also provided with black blinds, so as, on occasion, to entirely exclude the light. 3. We prefer a neutral grey or greyish green for the studio. Red would be somewhat hot-looking in summer, and flock paper, although good in appearance, harbours dust somewhat. 4. We prefer backgrounds stretched on frames. 5. If you risk being overlooked, you can use fluted glass in such portion of the window, but it excludes a little light. We do not approve of the use of blue glass.

W. R. C.—See a suggestion in the letter of our American correspondent next week for a method of making pencil bite on a glossy surfaced varnish. 2. The collodio-chloride process will give you good transparencies for the lantern. Simply adopt the plan described in our Year-Book, using plain glass instead of opal glass. Several houses supply collodio-chloride ready for use, but it is a very simple thing to get plain collodion, and prepare your own. 3. The transparent colours sold by artists' colourmen expressly for the purpose. 4. Sometimes the pictures to which you refer are produced by combination printing, and sometimes the double negative is produced in the camera, on the same principles as "doubles" are produced. The plan is described in our Ninth Volume, and in our Year-Book for 1866.

W. J. A. G.—You have combatted the difficulties of front light with fair success, and obtained some good results. The best effects in lighting are 2, 7, 8, and 10.

Thos. Gulliver.—The prints are excellent. Thanks.

Received. Samples of albuminized paper from L. Trapp and Co.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

	PAGE
Fluoride of Silver	37
Apparatus for Hire	38
Professor Tyndall on Dust	38
M. Blanquart Evrard's History of Photography	40
Questions and Suggestions. By A. de Constant	41
Instantaneous Photography. By W. T. Bovey	42
Prints and their Production. By S. T. Davenport	43
Correspondence.—Mr. Gulliver's Wet and Dry Process—Pure Water—Combination Negatives—Apparatus for Hire—Birds in Landscapes—Secrets in Photography—Front Light in Studios—Incentives to Progress	44
Proceedings of Societies.—Manchester Photographic Society	46
Scientific Gleanings	46
Talk in the Studio	47
To Correspondents	48
Photographs Registered	48

FLUORIDE OF SILVER.

The fluoride of silver is the only haloid salt of that metal with which photographers generally are not familiar. In the early days of photography it was the subject of some experiment, and statements have been made to the effect that it was more sensitive to the action of light than any other silver salt. Sir John Herschel and Mr. Hunt both published the results of their experiments, a process called the fluorotype having been suggested by the latter gentleman. In this process paper was treated with a solution containing one grain of fluoride of sodium, four grains of bromide of potassium, in two hundred minims of water, and then sensitized in a sixty-grain nitrate bath. This paper was stated to be sufficiently sensitive to yield a developable image in the camera with an exposure of half-a-minute, the operation being completed by development with a solution of protosulphate of iron, and fixing with hyposulphite of soda. The process, however, never attracted much attention.

Subsequently M. Blanquart Evrard stated that with albumen plates containing fluoride and iodide of silver he obtained a high degree of sensitiveness, producing instantaneous images in the camera; and he stated his conviction that the iodide alone, under similar circumstances, was sixty times less sensitive. Notwithstanding this statement, the fluoride of silver never seems to have come into use in photography. A few attempts were made by the earlier collodion experimentalists to employ this salt, but without success, its extreme solubility in water—half its own weight being sufficient to dissolve it—rendering it difficult to retain it on the collodion film, and no advantage being perceptible from its use.

We have made occasional experiments with fluoride of silver, but we have in no instance been able to verify the claims made in regard to its extreme sensibility. Previous to commencing these remarks we repeated some former experiments we had made. A piece of Turner's plain paper was treated by the aid of a glass rod with a fifty-grain solution of fluoride of silver, and pieces of the same paper were coated with two samples of collodio-chloride of silver, one of which had been mixed upwards of three months, and the other upwards of six months. When dry, all three were submitted to the action of sunlight. We found that both samples of collodio-chloride acquired a depth in one minute which the fluoride required more than five minutes to acquire. The sensitiveness to direct colouration was then, as on other occasions, very greatly less than that of chloride of silver. In development, however, the case was different. The paper, prepared with the same fluoride and the same collodio-chloride, submitted for a minute to dull diffused light, which very slightly changed the latter, and did not produce any perceptible darkening, was then submitted to a saturated solution of gallic acid. The chloride of silver slowly changed to a light brown, whilst the fluoride quickly darkened under the developer, acquiring a rich deep chesnut brown, inclining to black, which tint did not change in any degree after submitting to a bath of hyposulphite of soda. The same paper prepared with iodide of silver appeared somewhat more sensitive, but did not acquire such a rich or vigorous tint. Our experiments have not, however, at any time been sufficiently promising in result to induce us to prosecute them further, and we have not tried the effect of a mixture of the fluoride with other salts of silver.

One of the experiments we have contemplated, but for which we have not yet had time, may be worth mentioning. Remembering its solubility in water, it is clear that a gelatino-fluoride of silver might be made by adding a solution of the salt to a solution of gelatine of suitable thickness, the sensitive salt being thus in absolute solution instead of in suspension, as in collodio-chloride of silver. Paper prepared with this gelatinous solution of fluoride of silver would be especially suitable for enlargements, being nearly as sensitive as paper prepared with the iodide of silver, and would yield an image with more vigour and of richer, warmer colour, when developed with gallic acid. Further, the unchanged fluoride of silver, being soluble in water, should, theoretically, be removed by mere washing in water; but as traces of chlorides might be present in the paper, fixing in hyposulphite of soda would be desirable. The small trace of insoluble silver salt possible, however, under such circumstances, would render necessary an exceedingly weak hyposulphite bath, so that the amount of this *bete noir* of the photographer necessarily would be reduced to a minimum. We append an abstract of an interesting paper recently read before the Royal Society, by Mr. G. Gore, F.R.S., on the "Formation, Preparation, Analysis, Composition, Common Physical Properties, and Chemical Behaviour of Fluoride of Silver":—

"The salt was prepared by treating pure silver carbonate with an excess of pure aqueous hydrofluoric acid, in a platinum dish, and evaporating to dryness, with certain precautions. The salt thus obtained invariably contains a small amount of free metallic silver, and generally, also, traces of water and of hydrofluoric acid, unless special precautions mentioned are observed. It was analyzed by various methods, The best method of determining the amount of fluorine in it consisted in evaporating to dryness a mixture of a known weight of the salt, dissolved in water with a slight excess of pure and perfectly caustic lime in a platinum bottle, and gently igniting the residue at an incipient red heat until it ceased to lose weight. By taking proper care, the results obtained are accurate. The reaction in this method of analysis takes place according to the following equation;—

$$2AgF + CaO = CaF_2 + 2Ag + O.$$

Sixteen parts of oxygen expelled equal thirty-eight parts of fluorine present. One of the methods employed for determining the amount of silver consisted in passing dry ammonia over the salt in a platinum boat and tube at a low red heat. The results obtained in the various analysis establish the fact that pure fluoride of silver consists of nineteen parts of fluorine and one hundred and eight of silver.

"Argentic fluoride is usually in the form of yellowish-brown, earthy fragments; but, when rendered perfectly anhydrous by fusion, it is a black, horny mass, with a superficial satin lustre, due to particles of free silver. It is extremely deliquescent and soluble in water. One part of the salt dissolves in 0·55 part by weight of water at 15·5° C.; it evolves heat in dissolving, and forms a strongly alkaline solution. It is nearly insoluble in absolute alcohol. The specific gravity of the earthy-brown salt is 5·852 at 15·5° C. The specific gravity of its aqueous solution, 15·5° C., saturated at that temperature, is 2·61. By chilling the saturated solution, it exhibited the phenomenon of supersaturation, and suddenly solidified, with evolution of heat, on immersing a platinum plate in it. The solution is capable of being crystallized, and yields crystals of a hydrated salt. The act of crystallization is attended by the singular phenomenon of the remainder of the salt separating in the anhydrous and apparently non-crystalline state, the hydrated salt taking to itself the whole of the water. The fused salt, after slow and undisturbed cooling, exhibits crystalline markings upon its surface.

"The dry salt is not decomposed by sunlight. It melts below a visible red heat, and forms a highly lustrous, mobile, and jet-black liquid. It is not decomposed by a red heat alone; but, in a state of semi-fusion, or of complete fusion, it is rapidly decomposed by the moisture of the air, with separation of metallic silver. Dry air does not decompose it. In the fused state it slightly corrodes vessels of platinum, and much more freely those of silver. The salt, in a state of fusion, with platinum electrodes, conducts electricity very freely, apparently with the facility of a metal, and without visible evolution of gas or corrosion of the anode. A silver anode was rapidly dissolved by it, and one of lignum-vitæ charcoal was gradually corroded. A saturated aqueous solution of the salt conducted freely with electrolysis, crystals of silver being deposited upon the cathode, and a black crust of peroxide of silver upon the anode; no gas was evolved. With *dilute* solutions gas was evolved from the anode. By electrolysis of anhydrous hydrofluoric acid with silver electrodes, the anode was rapidly corroded.

"The electrical order of substances in the fused salt was as follows, the first-named being the most positive:—Silver, platinum, charcoal of lignum-vitæ, palladium, gold. In a dilute aqueous solution of the salt, the order found was:—Aluminium, magnesium, silicon, iridium, rhodium, and carbon of lignum-vitæ, platinum, silver, palladium, tellurium, gold. The chemical behaviour of the salt was also investigated. In many cases considerable destruction of the platinum vessels occurred, either in the experiments themselves, or in the processes of cleaning the vessels from the products of the reactions.

"Hydrogen does not decompose the dry salt, even with the aid of sunlight; nor does a stream of that gas decompose an aqueous solution of the salt; but the dry salt is rapidly and perfectly decomposed by that gas at an incipient red heat, its metal being liberated.

"Nitrogen has no chemical effect upon the salt, even at a red heat, nor upon its aqueous solution. Dry ammonia gas is copiously absorbed by the dry salt. In one experiment the salt absorbed about 844 times its volume of the gas. The salt, in a fused state, is rapidly and perfectly decomposed by dry ammonia gas, and its silver set free. A saturated solution of the salt is also instantly and violently decomposed by strong aqueous ammonia.

"Oxygen has no effect either upon the dry salt at 15° C. or at a red heat, nor upon its aqueous solution. Steam perfectly and rapidly decomposes the salt at an incipient red heat, setting free all its silver. No chemical change took place on passing either of the oxides of nitrogen over the salt in a state of fusion. By passing anhydrous hydrofluoric acid vapour over perfectly anhydrous and previously-fused fluoride of silver, at about 60° F., distinct evidence of the existence of an acid salt was obtained. This acid salt is decomposed by slight elevation of temperature.

"Numerous experiments were made to ascertain the behaviour of argentic fluoride, in a state of fusion, with chlorine; and great difficulties were encountered, in consequence of the extremely corrosive action of the substances when brought together in a heated state. Vessels of glass, platinum, gold, charcoal, gas carbon, and purified graphite were employed. By heating the salt in chlorine, contained in closed vessels formed partly of glass and partly of platinum, more or less corrosion of the glass took place, the chlorine united with the platinum and fluoride of silver to form a double salt, and a vacuum was produced. By similarly heating it in vessels composed wholly of platinum, the same disappearance of chlorine, the same double salt, and a similar vacuum resulted. Also, by heating it in vessels composed partly of gold, an analogous double salt, the same absorption of chlorine, and production of rarefaction was produced. And, by employing vessels partly composed of purified graphite, a new compound of fluorine and carbon was obtained."

APPARATUS FOR HIRE.

A correspondent, in a letter on another page, makes a suggestion which may prove useful to many photographers. Very often, to amateur photographers, and not unfrequently to professional photographers, the desire or the necessity occurs for the use of apparatus much larger or more costly than their ordinary operations require. It may be that the attempt is altogether of an experimental character; results being uncertain, render serious expense unjustifiable; or, if work be not experimental, it may be of a purely exceptional and occasional character, rendering a permanent heavy expense for a temporary necessary very undesirable. Under such circumstances our correspondent suggests that the facility for hiring such apparatus, whether lenses, cameras, baths, or other appliances of unusually large size or heavy cost, would often prove a boon to photographers, and might prove profitable to some dealers. The arrangement need not be difficult to make. A deposit of the value of the apparatus, or other sufficient security; a specific sum for the shortest loan, and fixed rental for each week of its continuance, with a proviso for purchase under any circumstances at the option of the borrower, or a necessity, perhaps, of purchase after undue detention: a few such provisions as these, to which each party to the contract will readily accede, might easily be arranged, and would rarely involve inconvenience on either side. We commend the idea to some of our commercial friends, and if readers of the Photographic News who are interested in seeing such an arrangement carried out will communicate with us, we will, by giving publicity to their views, aid in effecting the end in view.

PROFESSOR TYNDALL ON DUST.

Professor Tyndall has recently delivered at the Royal Institution a most interesting and suggestive lecture on the unseen but ever present floating particles of matter in the atmosphere by which we are constantly surrounded, in which we live and breathe. The presence of this dust, found in greater or less degree in all town atmospheres, is invisible in ordinary diffused light, but is revealed at once by a beam of sunlight, or other intense light, and on careful examination is found to consist chiefly of organic matter. The air of London is found to be full of this organic matter; nor is the atmosphere of the country entirely free from its pollution. No one, Professor Tyndall observes, would, without repugnance, place his mouth at the focus of a beam of light, to inhale the finely-divided dirt manifestly present; nor, he adds, is the disgust abolished by the reflection that, although the nastiness is unseen, we are churning it in our lungs every hour and every minute of our lives. There is reason to believe that such particles are constantly setting up a putrefactive fermentation whenever they come into contact with substances sensitive to their action.

With these facts as the basis of certain theories of epidemic disease we have not here to deal; but they are sufficiently suggestive to photographers, whose operations are conducted, if not with agents so directly subject to the influence of organic germs as living beings, are sufficiently sensitive to disturbing causes to be materially influenced by atmospheric contaminations, possibly in a greater degree than is generally recognized, the action of an agency unseen and not readily detected by ordinary tests being rarely suspected. The reflections which a perusal of Professor Tyndall's lecture must inevitably suggest, we apprehend, to all photographers, is the vital importance of rigid cleanliness and perfect ventilation in the dark room, not only for the health of the operator, but for the success and certainty of his operations. Notwithstanding a commonly accepted recognition of the fact that the dark room ought to be ventilated, into how few dark rooms is it possible to enter without the olfactories being assailed by the curious mixture of odours, suggesting acetic ether, acetic acid, collodion, iodine, methylic compounds; sometimes hydrocyanic acid, sometimes ammonia, and occasionally the sulphurous gases arising from decomposing hyposulphite solutions? If the ordinary atmosphere of towns is filled with the dirt described by Professor Tyndall, what must be the constitution of the atmosphere of many photographic dark rooms?

In connection with these experiments Professor Tyndall has had occasion to put into operation a very simple method of filtering the atmosphere, which has proved singularly successful, and may be suggestive to our readers. Filtration through cotton wool, it appears, will entirely remove the floating dust from the atmosphere, and render it, so far as these organic particles are concerned, as pure as the air of the highest Alps. Not only so as regards these particles, but, according to Mr. Horace Brown, who writes to the *Times* on the subject, gases may frequently be filtered from the atmosphere by this means. Mr. Brown states that a current of air passed rapidly through a small cotton filter was deprived not only of floating matter, but of ammonia, dry cotton wool having the property of absorbing fifty or sixty times its own bulk of that gas. Without entering into further comment or suggestion, we now append an abstract of the more important parts of Professor Tyndall's lecture:—

Solar light in passing through a dark room reveals its track by illuminating the dust floating in the air. "The sun," says Daniel Culverwell, "discovers atoms, though they be invisible by candlelight, and makes them dance naked in his beams." In my researches on the decomposition of vapours by light I was compelled to remove these "atomes" and this dust. It was essential that the space containing the vapours should embrace no visible thing; that no substance capable of scattering the light in the slightest sensible degree should at the outset of an experiment be found in the "experimental tube" traversed by the luminous beam. For a long time I was troubled by the appearance there of floating dust, which, though invisible in diffuse daylight, was at once revealed by a powerfully condensed beam. Two tubes were placed in succession in the path of the dust; the one containing fragments of glass wetted with concentrated sulphuric acid; the other, fragments of marble wetted with a strong solution of caustic potash. To my astonishment it passed through both. . . . I tried to intercept this floating matter in various ways; and on the day just mentioned, prior to sending the air through the drying apparatus, I carefully permitted it to pass over the tip of a spirit-lamp flame. The floating matter no longer appeared, having been burnt up by the flame. It was therefore organic matter. When the air was sent too rapidly through the flame, a fine blue cloud was found in the experimental tube. This was the smoke of the organic particles. I was by no means prepared for this result; for I had thought, with the rest of the world, that the dust of our air was, in great part, inorganic and non-combustible. Mr. Valentin had the kindness to procure for me a small gas furnace, containing a platinum tube, which could be heated to vivid redness. The tube also contained a roll of platinum gauze, which, while it permitted the air to pass through it, insured the practical contact of the dust with the incandescent metal. The air of the laboratory was permitted to enter the experimental tube, sometimes through the cold and sometimes through the heated tube of platinum. The rapidity of admission was also varied. In the first column of the following table the quantity of air operated on is expressed by the number of inches which the mercury guage of the air-pump sank when the air entered; in the second column the condition of the platinum tube is mentioned; and in the third the state of the air which entered the experimental tube:—

Quantity of Air.	State of Platinum Tube.	State of Experimental Tube.
15 inches	Cold	Full of particles.
15 inches	Red hot	Optically empty.
15 inches	Cold	Full of particles.
15 inches	Red hot	Optically empty.
15 inches	Cold	Full of particles.
15 inches	Red hot	Optically empty.

The phrase "optically empty" shows that when the conditions of perfect combustion were present the floating matter totally disappeared; it was wholly burnt up, leaving not a trace of residue. . .

The air of our London rooms is loaded with this organic dust, nor is the country air free from its pollution. However ordinary daylight may permit it to disguise itself, a sufficiently powerful beam causes the air in which the dust is suspended to appear as a semi-solid rather than as a gas. Nobody could in the first instance without repugnance place the mouth at the illuminated focus of the electric beam and inhale the dirt revealed there. Nor is the disgust abolished by the reflection that, although we do not see the nastiness, we are churning it in our lungs every hour and minute of our lives. There is no respite to this contact with dirt; and the wonder is, not that we should from time to time suffer from its presence, but that so small a portion of it would appear to be deadly to man. And what is this portion? It was some time ago the current belief that epidemic diseases generally were propagated by a kind of malaria, which consisted of organic matter in a state of *motor-decay*; that when such matter was taken into the body, through the lungs or skin, it had the power of spreading there the destroying process which had attacked itself. Such a spreading power was visibly exerted in the case of yeast. A little leaven was seen to leaven the whole lump, a mere speck of matter in this supposed state of decomposition being apparently competent to propagate indefinitely its own decay. Why should not a bit of rotten malaria work in a similar manner within the human frame? In 1836 a very wonderful reply was given to this question. In that year Cagniard de la Tour discovered the yeast plant, a living organism, which, when placed in a proper medium, feeds, grows, and reproduces itself, and in this way carries on the process which we name fermentation. Fermentation was thus proved to be a product of life instead of a process of decay. Schwann, of Berlin, discovered the yeast plant independently; and in February, 1837, he also announced the important result, that when a decoction of meat is effectually screened from ordinary air, and supplied solely with air which has been raised to a high temperature, putrefaction never sets in. Putrefaction, therefore, he affirmed to be caused by something derived from the air, which something could be destroyed by a sufficiently high temperature. The experiments of Schwann were repeated and confirmed by Helmholtz and Ure. But as regards fermentation, the minds of chymists, influenced probably by the great authority of Gay-Lussac, who ascribed putrefaction to the action of oxygen, fell back upon the old notion of matter in a state of decay. It was not the living yeast plant, but the dead or dying parts of it, which, assailed by oxygen, produced the fermentation. This notion was finally exploded by Pasteur. He proved that the so-called "ferments" are not such; that the true ferments are organized beings which find in the reputed ferments their necessary food. Side by side with these researches and discoveries, and fortified by them and others, has run the germ theory of epidemic disease. The notion was expressed by Kircher, and favoured by Linnæus, that epidemic diseases are due to germs which float in the atmospere, enter the body, and produce disturbance by the development within the body of parasitic life. While it was still struggling against great odds, this theory found an expounder and defender in the President of this institution. At a time when most of his medical brethren considered it a wild dream, Sir Henry Holland contended that some form of the germ theory was probably true. The strength of this theory consists in the perfect parallelism of the phenomena of contagious disease with those of life. As a planted acorn gives birth to an oak competent to produce a whole crop of acorns, each gifted with the power of reproducing its parent tree, and as thus from a single seedling a whole forest may spring, so these epidemic diseases literally plant their seeds, grow, and shake abroad new germs, which, meeting in the human body their proper food and temperature, finally take possession of whole populations. Thus Asiatic cholera, beginning in a small way in the Delta of the Ganges, contrived in seventeen years to spread itself over nearly the whole habitable world. The development from an infinitesimal speck of the virus of smallpox of a crop of pustules, each charged with the original poison, is another illustration. . . . .

Surgeons have long known the danger of permitting air to enter an open abscess. To prevent its entrance they employ a tube called a cannula, to which is attached a sharp steel point called a trocar. They puncture with the steel point, and by gentle pressure they force the pus through the cannula. It is necessary to be very careful in cleansing the instrument; and it is difficult to see how it can be cleansed by ordinary methods in air loaded with organic impurities, as we have proved our air to be. The instrument ought, in fact, to be made as hot as its temper will bear. But this is not done, and hence, notwithstanding all the surgeon's care, inflammation often sets in after the first operation, rendering necessary a second and a third. Rapid putrefaction is found to accompany this new inflammation. The pus, moreover, which was sweet at first, and showed no trace of animal life, is now fetid, and swarming with active little organisms called vibrios. Professor Lister, from whose recent letter this fact it derived, contends, with every show of reason, that this rapid putrefaction and this astounding development of animal life are due to the entry of germs into the abscess during the first operation, and their subsequent nurture and development under favourable conditions of food and temperature. The celebrated physiologist and physicist Helmholtz is attacked annually by hay fever. From the 20th of May to the end of June he suffers from a catarrh of the upper air-passages; and he has found during this period, and at no other, that his nasal secretions are peopled by these vibrios.

These statements sound uncomfortable, but by disclosing our enemy they enable us to fight him. When he clearly eyes his quarry the eagle's strength is doubled, and his swoop is rendered sure. If the germ theory be proved true, it will give a definiteness to our efforts to stamp out disease which they could not previously possess. . . . .

But let us return to dust. It is needless to remark that it cannot be blown away by an ordinary bellows, or, more correctly, the place of the particles blown away is in this case supplied by others ejected from the bellows, so that the track of the beam remains unimpaired; but if the nozzle of a good bellows be filled with cotton-wool not too tightly packed, the air urged through the wool is filtered of its floating matter, and it then forms a clean band of darkness in the illuminated dust. This was the filter used by Schroeder in his experiments on spontaneous generation, and turned subsequently to account in the excellent researches of Pasteur. Since 1868 I have constantly employed it myself. But by far the most interesting and important illustration of this filtering process is furnished by the human breath. I fill my lungs with ordinary air and breathe through a glass tube across the electric beam. The condensation of the aqueous vapour of the breath is shown by the formation of a luminous white cloud of delicate texture. It is necessary to abolish this cloud, and this may be done by drying the breath previous to its entering the beam; or, still more simply, by warming the glass tube. When this is done the luminous track of the beam is for a time uninterrupted. The breath impresses upon the floating matter a transverse motion, but the dust from the lungs makes good the particles displaced. But after some time an obscure disc appears upon the beam, the darkness of which increases, until finally, towards the end of the expiration, the beam is, as it were, pierced by an intensely black hole, in which no particles whatever can be discerned. The air, in fact, has so lodged its dirt within the lungs as to render the last portions of the expired breath absolutely free from suspended matter. This experiment may be repeated any number of times with the same result. It renders the distribution of the dust within the lungs as manifest as if the chest were transparent. I now empty my lungs as perfectly as possible, and, placing a handful of cotton-wool against my mouth and nostrils, inhale through it. There is no difficulty in thus filling the lungs with air. On expiring this air through the glass tube, its freedom from floating matter is at once manifest. From the very beginning of the act of expiration the beam is pierced by a black aperture. The first puff from the lungs abolishes the illuminated dust and puts a patch of darkness in its place; and the darkness continues throughout the entire course of the expiration. When the tube is placed below the beam and moved to and fro, the same smoke-like appearance as that obtained with a flame is observed. In short, the cotton-wool, when used in sufficient quantity, completely intercepts the floating matter on its way to the lungs.

And here we have revealed to us the true philosophy of a practice followed by medical men, perhaps more from instinct than from actual knowledge. In a contagious atmosphere the physician places a handkerchief to his mouth and inhales through it. In doing so he unconsciously holds back the germs of the air. If a physician wishes to hold back from the lungs of his patient, or from his own, the germs by which contagious disease is said to be propagated, he will employ a cotton-wool respirator. After the revelations of this evening such respirators must, I think, come into general use as a defence against contagion. In the crowded dwellings of the London poor, where the isolation of the sick is difficult, if not impossible, the noxious air around the patient may by this simple means be restored to practical purity. Thus filtered, attendants may breathe the air unharmed. In all probability the protection of the lungs will be the protection of the entire system. For it is exceedingly probable that the germs which lodge in the air-passages, and which, at their leisure, can work their way across the mucous membrane, are those which sow in the body epidemic disease. If this be so, then disease can certainly be warded off by filters of cotton-wool. I should be most willing to test their efficacy in my own person; and time will decide whether in lung diseases, also, the woollen respirator cannot abate irritation, if not arrest decay. By its means, so far as the germs are concerned, the air of the highest Alps may be brought into the chamber of the invalid.

M. BLANQUART EVRARD'S HISTORY OF PHOTOGRAPHY.

A most interesting contribution to the literature of photography, entitled "La Photographie—ses origines, ses progres, ses transformations, par Blanquart Evrard," &c., &c , has lately appeared in France, but only, we regret to say, for private circulation among the friends of the writer.

The name of the author is well known as that of a man of science and enthusiastic photographer, who, several years ago, started a printing establishment in Lille, in the North of France, at which many valuable works were, for the first time, illustrated by photography, the proofs being produced by a development process worked out by the author,

The work of M. Blanquart is an excellent and copiously illustrated *resumé* of the history of photography, from the early efforts of Wedgwood and Davy to the carbon process of Swan. Were we disposed to criticise, we should say that, in his observations on the efforts of the former gentlemen to fix the photographic image, he scarcely does them justice. He expresses his astonishment that they should have employed simple washings, which merely dilute the salt of silver employed, instead of decomposing it. He says the "most simple notions of science should have indicated to them the use of reagents, operating by means of double decomposition—reagents which they utilized daily in their operations, and which would not have had the slightest action on the image of reduced silver during the time necessary for the absolute elimination of the smallest particle of silver unreduced." We are at a loss to know what were the reactions employed habitually by Wedgwood and Davy which would have had this action upon the chloride of silver in intimate combination with the organic matter of the white leather substratum. We had imagined that even to the chemists of the present day the elimination of the "last traces" of such a compound in our albumen prints had hardly been realized, or, if so, with difficulty, or why the valuable researches of Davanne, Spiller, and others on the subject?

Among other interesting matters which will be more or less novel to the generality of our readers, are the histories of two new candidates for the honour of having made some progress in fixing the image of the camera before Daguerre and Talbot. Both are interesting, but we cannot admit the claims of one of these inventors, nor do we think that his secret has died with him, as M. Blanquart supposes. We refer to the process of M. Gonord, who, at the Industrial Exhibition of Paris, held in the Louvre in the year 1819, exhibited proofs of an engraving of various sizes, some reduced, some enlarged—all obtained, in "two or three hours," from the same engraved copper plate, and applied to the surface of porcelain vases for a very small consideration. M. Blanquart says, "Can photography claim the invention of Gonord? It is impossible for me to explain otherwise than by the enlarging camera, the obtention of copies reduced or enlarged in exact mathematical proportion. The presumption of our *savants* in 1819 was, that Gonord obtained his results by means of gelatine. This is an idea which rests upon no given datum. On the contrary, admit the use of photography, and the operations of Gonord are all explained, only he was a much more clever manipulator (*habile executant*) in 1819 than it is possible to be to-day, after an uninterrupted progress of thirty years."

We must confess that we are not a little astonished at this conclusion, proceeding, as it does, from one of the French *savants* themselves, noted for their logical acumen. Not only must M. Gonord have been a better manipulator than our photographers of 1870, but he must have been possessed of resources and knowledge which, in point of efficiency and economy, far surpass our acquirements of the present day. What process do we possess which will enable us to present proofs on paper in various sizes from the same engraved plate, proofs which may be transported to porcelain, and burnt-in in a few hours, for a trifling consideration? To suppose M. Gonord to have done this by means of photography is to suppose that he, a poor artist, living "in the greatest poverty," had arrived at the optical perfection of our best corrected lenses—had found some method of obtaining proofs not only in a pigment imitating printer's ink, but composed of materials fixable in the porcelain furnace.

A much simpler hypothesis will solve this mystery. We have only to suppose that M. Gonord had hit upon the ingenious process now well known, but the name of the originator of which has escaped us, that of taking a proof of the copper plate in ordinary ink, or in that used by the potters upon a sheet of caoutchouc. If an enlarged copy is wanted, the sheet must be unstretched while taking the proof, but must be afterwards extended in two dimensions at right angles to each other till the proof acquires the requisite dimensions. The enlarged sheet is then put under a vertical press, and the image transferred to paper. If a reduced copy be required, the elastic sheet must be previously stretched proportionately to the reduction required, the proof must be taken, and the sheet be then allowed to collapse to its normal dimensions. It is obvious that this can be done in a few minutes, and at a small cost, without any optical refinements or any chemical knowledge in advance of the period.

We have reason to believe that the problem is not impossible, even with gelatine. We have seen reproductions of a statuette, and of a "forme" of type in various dimensions, effected by means of electrotype deposition in a gelatine mould, and if this, involving an extension or contraction in three dimensions, be possible, *a fortiori* should the reproduction of an image upon a plane surface requiring change in two dimensions only.

M. Blanquart gives a most interesting account, extracted from M. Francis Wey's History of the Daguerreotype and of Photography, in the Musée des Familles, of the visit of a mysterious, poverty and disease stricken personage to M. Charles Chevalier, for the purpose of obtaining a more perfect objective to his camera, and who completed his visit by showing a photographic proof on paper, more or less successful, and leaving with M. Chevalier, very gratuitously and unnecessarily, we think, a bottle of the "brown" liquid with which he operated. A short time after (*quelque temps apres*) M. Chevalier—very improperly, we think—handed this bottle to M. Daguerre, telling him the story of the apparition, which never reappeared. According to M. Daguerre, he could make nothing out of the phial—brown as it was, *like iodine in solution*—but great loss of time. He declared to M. Chevalier that if "his man had a secret, it was not in the bottle."

We regret that we have not space for this history in detail. The scene is quite dramatic. We have first, as most important, an elaborate description of the costume—of the coat, hat, linen; next, and in order, the man himself—pinched, livid, worn out, ruined by work or hunger; the "blade and the scabbard," or, rather, to maintain due sequence, the scabbard and the blade. Next we have the manner of the man—"the timidity of distress," "the awkwardness of solitude and empty pockets," the result being that of a "poor devil who discounts the end of his misery upon the issue of a galloping consumption" (*qui escompte le terme de ses maux sur l'issue d'une maladi de poitrine.*

The next figure brought before us is that of a gentleman well known as an excellent photographer (M. H. Bayard), who occupies a high position in the office of the French Ministre des Finances. For him M. Blanquart claims not only the honour of having preceded Daguerre and Talbot, but of having effected this by a process which yields positive proofs in the focus of the camera, a process which no one else has had the curiosity to try, notwithstanding the publication of the principle upon which it was based.

If capable of the results attributed to it by M. Blanquart, the subject is a most important one, and we propose to return to it on a future occasion.

QUESTIONS AND SUGGESTIONS.

BY A. DE CONSTANT

The Temperature of the Laboratory.—The Most Suitable Preliminary Coating for Dry Plates.

From all sides are heard complaints of the intense cold and sudden changes of temperature to which we are just now subject. Such variations of the climate cannot but be detrimental to health, and must also prove of fatal effect to photographers, for every one knows how difficult it is to maintain the studio at a good and even temperature, and how much the production of good results depends upon such a proceeding in winter time. As regards myself, I make it a rule to have thermometers everywhere; and, notwithstanding that I have fires in every room, I find it an operation of some difficulty to maintain the heat at 14° or 15° Reaumur (63° to 66° Fahr.), a temperature, I consider, the most favourable for photographic work.

The simplest and best arrangement for heating would appear to be a stove on the floor of the studio disseminating its warmth equally throughout the workrooms; a hot air stove is not suitable for the purpose, as it produces a dry atmosphere, similar to that given by heated iron, and well known to be injurious to many chemical operations. A stove which evaporates water is equally unsuitable, as the atmosphere becomes impregnated with moisture, and thus damages the glass plates and lenses with which it comes into contact. An open coke fire is also to be objected to, as, according to my experience, it charges the atmosphere with a fine dust forming a source of annoyance difficult of removal. On the other hand, the brick furnace gives a very mild and regular temperature, and appears, therefore, exceedingly worthy of adoption. In any case, here is a practical question which deeply merits to be studied, and to which I would call the attention of my brother photographers.

The more experience I gain in the practice of dry plates, the more important I find it to be that in all methods, and with the employment of the best descriptions of collodion, a preliminary coating should be applied to the plate; in most instances this preliminary coating is absolutely necessary, and in all cases is it a useful precaution. When one sees how adherent the collodion remains upon the plate in the albumen methods, it cannot but be felt that this material is exceedingly well suited for the preliminary coating, and this is the conclusion at which I have arrived, preferring the same greatly to india-rubber or gelatine. The last-named of these two substances has been to me the cause of many failures, which I still remember with fear and trembling.

As regards the use of albumen, I have never found it, as affirmed by Major Russell, to give rise to difficulties when employing an alkaline developer, a solution I invariably use; it is a material which has just now risen into general favour, although the strength or density at which it should be used, as likewise the method of applying it to the plate, are still moot questions.

As to the strength of the albumen solution, the formulæ recommended vary from equal parts of albumen and water to one part of the former dissolved in twenty or twenty-five times its volume of the latter; while as regards its application to the glass, some insist upon pouring the solution upon a wet plate, while others recommend its employment upon a dry surface. I do not pretend to know more than others, but, inasmuch as I was led to my present *modus operandi* by repeated failures experienced in other directions, and as I am now able to work with perfect security and regularity, a description of my method may not be out of place.

Having remarked that a strong solution of albumen was filtered with difficulty, and yielded, moreover, a film of unnecessary thickness, which was not without its disadvantages, and failed to impart greater solidity to the coating of collodion, I resolved to adopt, after repeated experiments, a solution of one part of albumen in twenty-five parts of distilled water, the albumen being well beaten and filtered, and one drop of ammonia added to every one hundred cents. cub. of the liquid. This preparation is filtered through paper with the greatest care, and sufficient for the coating of a plate poured into a small glass vessel. The plate should receive a final polish previously to its being coated, so as to ensure of its being perfectly dry; it is then held by means of a pneumatic holder in a horizontal position, and the albumen solution poured upon the upper end from one corner to the other. The solution is then, by means of a glass rod held perfectly flat, conducted from one end to the other of the plate by a uniform movement of the rod, the surplus solution running off into a receptacle placed for the purpose; when covered, the plate is inclined backwards and forwards to equalize the film, and prevent it from becoming thickened at the margins.

Thus prepared, the pneumatic holder is removed, and the plate placed upright upon filter-paper in a locality free from dust. In two hours the plate will be perfectly dry, if the albumen solution used is that recommended by me; and so clear and transparent is the film that, if the precaution is not resorted to of marking the non-prepared side, it will be impossible otherwise to distinguish it.

Such is the simple and ready method I adopt for applying the preliminary coating; but, in order to secure success, one important condition must be fulfilled. It is that of carefully cleaning the glass rod with tissue paper, or a clean rag, after the preparation of each plate, and of subsequently keeping it immersed in a vessel of filtered water, as otherwise the albumen attaching to the rod from the first operation rapidly dries, and, when the instrument is again used, becomes distributed over the plate in the form of powder, which destroys everything. In working, however, as I have indicated, all danger on this score is avoided, and the production of a preliminary coating may be depended upon exceedingly suitable for dry plates, and free from those spots and stains so frequently met with.

It may be argued that the method of pouring the albumen solution upon wet plates in the same manner as collodion is applied is an easier and more simple manner of working. This may, indeed, be the case; but, alas! I acknowledge, to my shame, that it has ever failed me to albuminize a plate in this way; for as soon as the plate was taken from the water, and placed in a horizontal position, the water fled on all sides, leaving dry spaces all over the plate, and thus rendering the equal distribution of the albumen over the surface impossible. Moreover, it appears to me that the water existing upon the plate would mix itself with the albumen in an exceedingly unequal and irregular manner.

Whatever the method employed for coating, however, when the plates are dry, it is very necessary to clean the backs thoroughly, so that no trace of albumen remains thereon. If this is done, the collodion covers every portion of the albumen surface, and it is then impossible for the sensitizing bath to become injured, as the silver solution never comes into actual contact with the albumen.

Lausanne, 4th January, 1870.

INSTANTANEOUS PHOTOGRAPHY.

BY W. T. BOVEY.*

WE now approach the enquiry that treats on the direction which experimentalists must pursue if they would be encouraged with hopes of ultimate success; and in dealing with so important a subject I shall probably make my remarks most clear if I begin at the beginning by recapitulating in substance what I have before written concerning the nature of the latent image.

It will be understood that photographic theorists are divided in opinion with reference to the nature of the latent image which is by light impressed on a sensitive film, some believing in the chemical theory, others in the physical. The first has found an able exponent in Mr. Cherrill, whose intelligible theory of electro polarization is, in my opinion, the most correct which will ever be advanced; and I am pleased to find that the ideas I have to express are in striking unison with the theory I have most specially alluded to.

An ingenious proposal was recently published by Mr. Blair, who advised a momentary exposure of a sensitive plate to light, that sets up an incipient state of excitement which overcomes the primary inertness that would expend a portion of time when the plate is placed in the camera without being subjected to such exposure. I scarce need add that the principle advocated by Mr. Blair is one most sound, but its practical application, except in skilful hands, must prove uncertain and dangerous. In short, if we would materially reduce the time now needed for exposing a collodionized plate to light, we must add to the collodion some agent to step in between the iodine and silver immediately the cap is removed from the lens. To make my meaning clear, I provide an illustration which my scientific readers will readily comprehend. We will suppose a case of two friends in company walking with arm linked within arm. Name one iodine and the other silver. We will now imagine a third friend who, for a time, lingers behind, but eventually moves forward at a rapid pace, and severs the union only to form an additional link, and the three, with arms linked together, proceed on their way in amicable companionship. This third party plays a part similar to that which a third substance added to the collodion should perform in any reliable system of instantaneous photography. But here the question arises, Where the substance that can be thus applied? Where the proof that such application would perform the desired office? Answer: About two years ago my time and attention were much occupied in studying the principles involved in printing on paper prepared for development, being naturally desirous of discovering the why and wherefore, which my numerous clients where anxious, by my labour, to elucidate. When studying the developing action of gallic acid my curiosity was aroused by the variety of effects which the developer brought out on papers that had undergone varying lengths of exposure to light. A paper very fully exposed gave rapidly a red image, which the developer was capable of dragging any distance beyond the requisite depth. One, under-exposed, very tardily brought forth a dirty green image, which could scarcely be coaxed up to sufficient vigour; whilst a paper which had received the happy medium of exposure yielded an image which developed, without a pause, within a shade or two of done, when hesitation induced a green precipitate to finish and glaze a picture that in tone was but little inferior to a gold-toned print.

Ruminating on the results of the experiments described, I was at length forced into a conclusion that gallic acid develops a picture under conditions that are controlled by the state of the latent image; that when the gallic acid solution is poured over an over-exposed print, or one which has received the right amount of exposure, it immediately decomposes those atoms of iodide of silver that have been strongly polarized by light; that under such circumstances the image is built up from beneath; but when the sensitive paper is under-exposed such decomposition of the latent image does not ensue, and the picture is formed with a true gallate of silver, which the developer tardily precipitates. In short, to put a bold face on the matter with reference to the red image that follows full exposure, I regard it as being composed of a combination of iodine, gallic acid, and silver, more expressively rendered thus—by an iodo-gallate of silver (I coin the adjective).

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* Continued from p. 30.

Following up a train of reasoning, I reasonably surmised that the best proof of the correctness of the views I have formed would be found in conducting my further experiments with the more sensitive collodion, and my preliminary cogitations ran thus:—

If I am right, I reasoned, a collodion plate sensitized and divested of free nitrate should, with a surface-wash of gallic acid, produce a visible image when exposed in the camera. I tested the matter practically, and it was as I had surmised: the image so produced was incapable of further development by any reducing agent.

Again I reasoned: A collodion film strongly charged with gallic acid must, by its opportunities of free access to the iodide of silver when forming in the bath, bring about a spontaneous change of elements. To test this matter, I mixed a strong alcoholic gallic acid solution, and added a few drops to a small quantity of collodion, and found the experiment prove me once more correct; for immediately the plate was immersed in the silver bath a beautiful ruby-coloured film was formed, not externally, but internally, where the change was best seen by transmitted light.

Once more cogitating over the results of my labours, the conclusions were, that a collodion homœpathically dosed with gallic acid should escape spontaneous decomposition, yet the small addition of the acid should materially shorten the usual time of exposure to solar light. On submitting the matter to a practical test, I was delighted to find myself once more in the right. I added to one ounce of a ripe collodion half a dozen drops of alcohol, which, to each ounce, contained some eight or ten drops of a saturated aqueous gallic acid solution. The comparative tests were applied on a day late in October, when the sun shone feebly through a yellow curtain which London photographers too often look upon and curse. An instantaneous exposure with the ordinary material produced something very near akin to *nil*. The collodion homœpathically charged with gallic acid produced with a similar exposure the negative from which I printed the picture, which I send to head-quarters to be reported on. It is a portrait of a child who, up to the present moment, was never waking and still. I developed and intensified with iron.

In concluding the lengthened remarks contained in this article, I must observe that in naming gallic acid I do not mean to convey the idea that the substance named is the only agent that can be applied. My object is to point out the principle to be recognized, and as the time at my disposal only permits me the fascinating privilege of conducting experiments with camera work at rare intervals, which prove few and far between, I leave the matter to abler and more favoured hands, hoping that he who seeks may find, and, when found, that the finder will not lock up the treasure-trove in the limbo of secrecy, or in the office devoted to patented monopolies.

PRINTS AND THEIR PRODUCTION.

BY S. T. DAVENPORT.*

Wood Engraving.—Where a large number of illustrations were sought to be introduced into a work, the time occupied in printing tended greatly to retard publication, and we therefore find that attention was soon directed to the improvement of the art of wood engraving, as a means of simplifying and cheapening production. This art is supposed to have been known and practised in Europe prior to 1285, having been introduced from China. Soon after engravings had become a necessary part of every book that was presented to the public, an increased amount of attention was directed to improving this art, but it did not make much progress in England until the time of Thomas Bewick, notwithstanding that the practice of lowering portions of the surface of the block, so as to graduate the tints in printing, was known.

Thomas Bewick, in 1775, received from this Society a premium of £7 7s. for his specimen of engraving on wood, and he settled in London for a short period in 1776. In 1777 he left London, and returned to Newcastle, where he entered into partnership with his former master. Bewick may be considered as the introducer of the art, and he was the first to apply it with success in the delineation of animals and landscapes. The blocks cut by him, in illustration of his "History of British Birds," are some of them looked upon as his masterpieces. He was assisted in the production of many of his works by his brother John, by Luke Clennell and others of his pupils; but though the production of the blocks had been perfected, the art of printing from their surfaces had not yet been sufficiently attended to. Several years, however, before Bewick's death, he had conceived an improvement, which consisted in printing a subject from two or more blocks, not in the manner of chiaroscuro, but in order to obtain a greater variety of tints and a better effect than could be obtained without great labour, in a cut printed in black ink from a single block. This improvement, which had been suggested by Papillon in 1768, Bewick proceeded to carry into effect, but before he had completed his work he had himself ceased to live. He had, however, so far proceeded with his blocks as to admit of four impressions being taken from them about a week before his death. The subject he selected for his experimental blocks was an old horse waiting for death. Bewick died in 1828, and the blocks were finished by other hands, and published in 1832.*

Many artists of ability soon rose up, and followed in the path which Bewick had so ably opened; among them were William Harvey, Robert Branston, Henry White, John Thompson, and others whose works have become universally known in the literature of our own times.

Coloured Printing.—From the earliest times, prints from wood blocks or engraved plates have been taken in black ink, and various are the means which have been resorted to, to get rid of the coldness of effect and want of transparency due to the use of such pigments alone. In 1393, soon after cards had been first printed or stencilled, in the account book of Charles Poupart, treasurer to Charles VI. of France, there is an entry of sixty-six sols of Paris, given to Jaquemin Grinnoneur, printer, for three packs of cards, gilt and coloured, and of different sorts, for the diversion of his Majesty. That the same desire existed in this country, as soon as engraving began to take its hold on the public mind, is evidenced by the examples exhibited. Tints and colours were sought to be employed in the preparation of prints from engraved plates, whatever the process of art might be by which they were produced, and Bartolozzi early introduced the practice of printing in warm tints from the plates engraved by him, and Boydell, in some of the plates he published, printed a mezzotinto ground in warm inks over the etching. Examples of plates engraved by Erlam, and so printed, will be found in the second volume of Boydell's plates, after pictures by celebrated masters.

In 1777, the Society of Arts rewarded Mr. Robert Laurie for disclosing his method of printing mezzotinto prints in colours, and an example of the results he obtained is before the meeting. Colour printing was soon afterwards practised, both at home and abroad, and the example of mezzotinto engraving by C. H. Hodges, after a picture by P. P. Rubens, and published at Amsterdam, in 1807, shows what the art had attained to at that date. The examples of fruit and flowers engraved by the chalk process show the perfection to which coloured prints and printing attained in connection with that art in France; and a further illustration is afforded by the portrait of Dr. Young, printed on satin, in this country. Of all the systems of engraving, that known as line engraving was least suited to yield satisfactory results by colour printing, but a few examples are occasionally to be met with. They appear to have been published by E. Harding, of Fleet Street.

Any process of engraving which afforded a large amount of detail within a limited surface, or which failed to yield an unbroken tint when printed from, must have proved far too costly or ineffective to admit of extensive application, as inking in the plate must have been a tedious and costly operation, and much too slow for commercial adoption. The only process of engraving which, so far as I know, ever came into general use as a source of coloured prints, previous to the discovery of lithography, was the aquitana process, and the prints so obtained were printed in various colours, by making portions of the works, and filling in the separate colours as through a stencil-plate. This was effected by small inking-rubbers, known as thumbs and fingers, and the printing was called thumb-printing. Wiping off the ink required much care, and the prints so obtained were then finished by hand-colouring, after the paper on which they were printed had dried. The "View of the Rock of Gibraltar," taken from the Devil's Tongue Battery, is a fine example of this description of coloured print; it was published in 1808.

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* Continued from p. 33.

* See Jackson's "History of Wood Engraving."

Colour-printing has now been brought to great perfection, owing to the practice followed of printing tints from flat surfaces which are free from grain, such as lithographic stones, wood blocks, &c.; and to these I must now refer.

Lithographic Printing.—The successful production of a lithographic print depends upon a combination of circumstances, viz., the quality and surface of the stone; the skill with which the drawing is made by the artist; the nicety with which the etching process is performed; the care with which the printing ink is prepared and applied; and, in the case of colour-printing, the degree of refinement and approximation of the print to the coloured work of the artist will also depend, in a great measure, upon the number of stones employed to produce the gradations of colour required in a highly finished chromo-lithograph.

In Germany, in which country the art was discovered by Senefelder, lithography was soon regarded as a valuable ally to engraving, and it was early practised and carried to a considerable degree of perfection; but in England our accomplished engravers regarded it as almost too insignificant to be heeded. It was accordingly passed by almost unnoticed in England, till the success of Hulmandel's efforts called attention to the art; and the subsequent publication of Senefelder's work in London, in 1819, drew public attention to it, and from that date the art made rapid progress, and is still daily becoming more generally used in connection with both commerce and art.

To Mr. Hulmandel is due the credit of having developed in this country, not merely the capabilities of lithography proper, but also colour-printing by its means. He first applied it in copying an Egyptian painting, in which the colours were flat, and without gradation, and the outlines were printed in black ink. Mr. Owen Jones also early carried the same art to much perfection in his work on the Palace of the Alhambra, the brilliancy of colouring in which rivalled, in some instances, the painted missals of the Middle Ages; and he carried the art to a still higher point of perfection in the production of his work entitled, "Flowers, and their Kindred Thoughts;" but to Messrs. Leighton Brothers belongs the credit of having produced the first of that series of prints now known as chromatic prints, the peculiarity in the production of which consisted in the entire abandonment of black ink. The first prints so produced were published by Messrs. Rowney, in 1849, and were entitled "Dovecot," and "A Sketch near Claines, Worcestershire." In 1850 Messrs. Hanharts produced their first chromo-lithograph. Of the large number of works so produced since, and the great improvements which have been introduced into the manipulation of the stones and colour, by Messrs. Rowney, M. and N. Hanhart, Vincent Brooks, and Dalziel Brothers, it is impossible to speak too highly; and I am enabled, by the kindness of those gentlemen, to exhibit a few specimens of their most recent productions.

The influence of the improvements effected in the art of wood-engraving and printing from wood blocks, and of lithography and litho-chromatic printing, upon the older arts of engraving upon metal plates, has been such that the processes in common use fifty years ago can scarcely be said to exist now.

But while engraving has been superseded by the processes I have referred to, several new arts have been developing, the results of which, by the combined skill of men of science—artists, chemists, photographers, and mechanics—are opening to commerce new, simple, cheap, and permanent printing processes.

(*To be continued.*)

Correspondence.

MR. GULLIVER'S WET AND DRY PROCESS.

Dear Sir,—I read with considerable interest the article by T. Gulliver on "Wet and Dry Process" in the News for January 14th, but cannot understand how he uses a camera without dark slide for wet plates. I know how it is used for dry plates. I understand all of his paper till I come to the fourth paragraph. He says, "Now for the way of working the above. The different views were selected, photographed, and stowed away." But he does not give the working of the above, or say how they are photographed without a dark slide. We have many practical hints from Mr. Gulliver, and this will be the very thing I have long sought for, if you or Mr. Gulliver can make the matter a little plainer.—I remain, yours truly, W. C. Cox.

Hardingstone, January 24th, 1870.

PURE WATER.

Dear Sir,—On looking over my photographic gleanings to-day, I came across the following, which was given me some twelve years ago by Professor R. Hunt:—

"*To Catch Pure Water.*—Place four poles into the ground about six feet apart. Then fasten a white cloth or sheet horizontally upon them. When it rains, the rain will fall in a small stream from the centre of the cloth quite pure."

I have not tried the above, as my practice is very limited, and I can always get distilled water in plenty; but I thought it might be of service to some readers of the News, as it comes from a high authority.

I see there have been some plate-cleaning solutions given the last week or two. The best I ever tried is the one given in the first volume of the News: common salt dissolved in boiling water, then add a little rouge or rotten-stone. By simply rubbing the glass with a small portion, and allowing it to crystallize on the plate, it can be wiped off with a dry cloth, leaving the plate beautifully clean.

Thanking you for past favours, I am, sir, yours respectfully, Devon.

Crediton, January 24th, 1870.

COMBINATION NEGATIVES.

Dear Sir,—My name having been alluded to last week in your article on "Combination Negatives," will you permit me to state that I am not yet in a position to offer to the profession my method of producing this class of picture. I wish to have a few fair samples of the work to show, which I have been unable to obtain, as these short working days leave me nothing to spare from regular business for the purpose.

I am strictly of opinion that, to be commercially successful, combination negatives must be produced in one to enable the prints to be offered at a reasonable selling price, for, to say nothing of the utter impossibility of entrusting them to *an ordinary* printer, the difficulty of production is so great, and success so uncertain, even when printed by the "master mind," that perfect satisfaction is rarely realised. Every one knows that paper tones according to the amount of printing, and unless the separate printings are *exactly matched*, they must differ in colour, according to the extent of the difference in printing. I have seen combination pictures that have made me long for "colour and brush" to harmonize the whole; and I confidently believe that, unless the picture be printed at "one printing," perfect harmony will not be a part of it.

Although my efforts lay in the direction of a "single combination negative" (contradictory terms), I shall endeavour to make my process available in the production of a class of picture that has hitherto, from the same causes, been denied to the profession, and open up a new gold field for our working. The public has got more money to spend than ever, and we shall have our share of it if we invite them by showing them something new. I do not propose to make my process exclusive by asking any exorbitant licence, but would rather make it universal by moderate remuneration, believing that success in all things lies in universality, for then every one becomes familiar with and wants and asks for it.

When my plans are matured, which I hope will be very shortly, I shall inform my brother photographers, through the medium of your advertising columns. I am, dear sir, yours truly, Thos. G. Hemery.

8a, Bruton Street, Berkeley Square, 25th *January*, 1870.

APPARATUS FOR HIRE.

Sir,—Amateur, and, I dare say, professional photographers, are often in want of a set—camera, lens, &c.—of a certain size, or a dark tent, or other portions of the usual apparatus, for a day or two's work, or for a holiday excursion Now, it occurs to me that the lending on a deposit of cash, or other security, of such materials, besides the profit, though, perhaps, small, would be a valuable adjunct to a photographic dealer's trade. For myself, and, no doubt, for other amateurs who can only be away from business during a short period each year, it is not worth while to incur the expense of buying even second-hand apparatus.

I made some inquiries a little time ago, and could hear of no place where what I wanted could be had on hire for a few days.

Perhaps some house would think the experiment worth trying during the coming season; if so, and if opportunity allow, I hope there would be an occasional customer in yours very truly, N. T. G.

22nd January, 1870.

BIRDS IN LANDSCAPES.

Dear Sir,—In your leader of the 21st inst., after various attempts at the solution of Mr. Robinson's mode of accomplishing his seascape containing the "gulls" (from various correspondents), none of which are right in my humble opinion, *you* say, at last, Mr. Robinson's mode of producing the same still remains a *secret*.

We photographers have always been told that the best photographers really had no secrets, and that their success depended only on their superior talent and great practice, and that, as a rule, all really good things were freely given to the photographic press.

This I firmly believe, and I also believe that Mr. Robinson has no secret to divulge, only that he might say the picture above named was taken with Mr. Dallmeyer's rapid rectilinear lens, the chemicals in the best condition, and an instantaneous exposure. And I have no doubt but that if photographers had not been so ready with their suggestions as to how the picture was taken, they would, ere this, have been in full possession of the details. What has Mr. Robinson to gain by withholding such information? I should say nothing, for it is not one photographer in a thousand who, though he had been with Mr. Robinson and seen him go through the operation of producing the said photograph, could "go and do likewise."

I have not the slightest doubt but that Mr. Robinson is thoroughly disgusted with photographers generally, at their ignorance displayed about the production of this picture. Inland photographers have no idea of the actinic force of light at the seaside; it is more than double that found inland, and especially in inland towns. I myself, having worked at the seaside some ten years since, and with the chemicals and lenses of ordinary kind only, found then that for an outdoor picture of cloud, wave, and shipping in the distance, it merely required a "Scotch cap" *a la* Wilson, or the focussing cloth doubled up in front of the lens, and pulling off and replacing as quick as possible, to effect a full exposure. Instance the instantaneous pictures of Mr. Wilson of Aberdeen, and Mr. Blanchard of London; and, what is considerably more difficult, street views, too, with the objects brought almost to the camera.

Perhaps Mr. Robinson chose a very brilliant day for the work—say anywhere from the beginning of May to the end of July.

With a good sample of collodion, a good strong nitrate bath and strong developer, and the lenses that are now to be had, he is a bungling photographer who does not get everything that is before the camera seaward.—I am, dear sir, very truly yours, A. Whitham.

January 24th, 1870.

SECRETS IN PHOTOGRAPHY.

Sir,—There is something startling to a believer in photographic journals, and especially in the News, in two remarks which have recently appeared in your pages. On page 22, January 14th, a correspondent signing "E." in an important and well meaning, but, as I think, mistaken letter, says: "The somethings that turn up in the studio, the happy ideas that pass through the photographer's brain, are sorted, the pearl from the dross; the dross only in some cases finds its way into the photographic journals, and the pearl is retained in its shell." In your issue of January 21st, page 26, speaking of the "gull picture," the Editor says that the method of producing it "still remains a secret."

Now, as the Photographic News has always consistently taught that there were no secrets in photography of any worth or importance, that the journals contained all the information worth knowing, and that excellence depended on superior skill, not on secret dodges, and as I have always confidently believed this to be the case, it is a little surprising and a little disappointing to find such assertions as those I have quoted. Nevertheless, with all deference to the Editor, I beg emphatically to state my conviction that in neither case is the statement really the truth. I do not believe that as a rule secrets do exist amongst photographers. There may be one or two processes in regard to which a pretence of secrecy is maintained; but I doubt if a single photographer in this country works any process which is known only to himself. The only processes in which any secrecy is claimed in this country at the present moment, refer, I believe, to enamelling, to preserving sensitive albuminized papers, and to the "gull picture." But is it certain that any of the methods are secrets? For anything that is asserted or known to the contrary, the whole of them may have been already published in the journals, the only thing which may be secret in the case being as to which of many published processes has been employed in the cases in question. Certain it is there are processes published quite capable of yielding the pictures supposed to be by secret processes, the only thing required being skill and patience to work them out. If, then, there are several modes published whereby, say, a gull picture might be successfully taken, it is surely not a secret of much importance as to which of several possible processes Mr. Robinson used.

The proposition of "E." to encourage the publication of discoveries or novelties of importance by medals is worthy of serious consideration. If I remember rightly, a medal called the President's Medal was instituted by the Parent Society, expressly to reward those who published valuable improvements at the Society, and, unless I am wrong, the first of those medals was given to Mr. Wharton Simpson for the collodio-chloride process. Has anything further been done with it?

There is a little confusion in the antithesis of "dross" and "pearls;" but I should like to ask "E." if he knows of a single instance in which a photographer who has conceived a "happy thought" has kept the pearl a secret, and sent the dross to a recognized photographic journal? Of course there are journals and journals, some little more than dross, but no one dreams of counting in such things.—Yours truly, X.

FRONT LIGHT IN STUDIOS.

Dear Sir,—Front light and side light have been so frequently discussed in societies and in correspondence in your pages that one would imagine that the subject of lighting must be now almost perfectly understood. Such, however, is not the case, and as the subject is one of vital importance to every photographer, I will ask you to insert the following remarks if you consider that they will in any way tend to solve the knotty point.

It has been proved that front light studios have given flat, weak results, and required long exposures. It has also been proved that the best results and shortest exposures have been obtained in studios where the sun's rays were cut off by a high wall. It appears to me that the solution of the difficulty is to be found in the chapter on optics that treats of the interference of light. In it Chambers states that when two waves of light moving in nearly the same direction cross each other they strengthen each other, and give density to the light; and when two waves moving in opposite directions cross each other there is no light where they cross, but they recover their former intensity, and move on as if they had not crossed each other. It is, therefore, plain to me that when two waves meet each other, which they must do where much front light is used, they will weaken each other much more than waves crossing each other in a ridge roof studio where side light is used.

The same idea holds with a studio protected by a high wall. Without the wall the reflected north light meets and has to contend with the direct rays of the sun to the very window of the studio, and if we could see them they would present very much the appearance of a bay with a steep rocky shore, which, with the retreating waves meeting the advancing waves, is very much like a boiling pot. Where the direct rays of the sun are cut off by a high wall, if we could see it, I imagine it would be like a bay with a sandy shore, where the waves, being absorbed by the sand, would not retreat to disturb and break up the others; so the wall cuts off the direct rays of the sun in proportion to the height of the wall, and allows the north light to come in towards the sitter in unbroken waves.

If I am right—and my experience for the past seven years goes to prove that I am—it is clear that the less front light that is used the better. The expression of the face will also be much better where little front light is used.—I am, yours truly, D. Welch.

Newry, Ireland, January 18th, 1870.

INCENTIVES TO PROGRESS,

Sir,—I have been a constant reader of your valuable journal for many years, but I must say I do not recollect so interesting an article as the one signed "E." in your impression of January 14th. I agree with "E." in every respect: we want something to work and think for; and when we find that something, we shall soon hear of our brother photographers making themselves useful to the art we ought all of us to feel a pride in pushing forward. I would recommend that, for the good cause, it should be commenced at once, and let the motto be, "Do, as well as talk." I assure you that my name will not be found wanting.—I am, sir, respectfully yours, A. R.

Manchester, January 21st, 1870.

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Proceedings of Societies.

Manchester Photographic Society.

The ordinary monthly meeting was held at the Memorial Hall on Thursday, the 13th inst., W. T. Mabley, V.P., in the chair

The minutes were read and confirmed, and Mr. Albert Eastham was elected a member of the Society.

The Chairman then introduced Mr. W. Clifton, of London, Drawing-master of Blackheath Proprietary School, Notting Hill ditto, and Trinity College, Eastbourne, who had kindly offered to deliver a lecture, entitled "An Hour with a Drawing-master."

Mr. Clifton said he had not expected to meet such an audience as that before him, and he was afraid that his lecture would be more interesting to those engaged in the practice of drawing than to a number of intelligent photographers and persons occupied in scientific investigation. He must begin at the beginning, and say a few words on perspective. He then instanced the laws which regulate the direction of lines, and alluded to the great importance of care in selecting the point of sight. He considered the greys—or, as photographers would call them, the half-tones—of immense importance. The greatest force should lie in and around the principal object, and every picture *should have* a principal object. Deep shades and intense lights should never be placed against each other; a grey or middle tint should always lie between them, and the masses of foliage or other objects should be well separated by light and shade. He advised photographers to attend art-lectures, and to study the best works on line and composition. The artistic study of light and shade is too little attended to by our best manipulators; in their efforts to get the distance away, their foregrounds, as a rule, are too black. He was aware of the difficulties that met photographers in this respect, but when he saw, as all observing persons must see, how enormously photography had advanced, he felt satisfied that when the mind was directed to them, all these blemishes would disappear.

Mr. Clifton also indicated that particular care should be given to the natural horizon, in relation to objects, incidents, and distant views, showing how much depended on the proportional position of the horizontal line.

Mr. Clifton illustrated his lecture with a number of clever drawings in black and white, and spoke for an hour and a half, judiciously mixing up with much instructive matter a number of smart witticisms that pleased and kept his audience in the best possible temper.

The meeting closed with votes of thanks to Mr. Clifton and the Chairman. C. Adin, Hon. Secretary.

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Scientific Gleanings.

Action of Bromine upon Ether.—MM. Ladenburg and Wichelhaas say that "the action of bromine upon compounds of organic origin is either a substitution or an addition, so that the halogen is found instead of H, or has become incorporated with the organic molecule, which is thereby saturated; but this action is not that commonly met with when bromine acts on the substances known as "ethers," since very frequently the halogen in these instances combines with the radical (*e.g.*, C_2H_5), and, while displacing O, causes an intrinsic change of the molecule. The authors have investigated this action more especially with Kay's ether (orthoformic ether), boiling between 146° and 148°. Bromine acts upon this fluid, even at the ordinary temperature, forming bromide of ethyl and carbonic ether. The reaction of the halogen upon this orthoformic ether is represented by the following formula:—

$$2CH(OC_2H_5)3 + Br_2 =$$
$$= 2BrC_2H_5 + CO(OC_2H_5)_2 + CHO(OC_2H_5) + C_2H_6O.$$

The authors also investigated the action of bromine upon ortho-carbonic, ethyl-glycolic, and ethyl-lactic ether.—*Chemical News, from Annalen de Chemie.*

Action of the Haloids upon the Metallic Derivatives of some Carbon Compounds.—M. Bungo prepared silver succinimide by boiling pure succinimide with water and oxide of silver. The silver succinimide thus obtained was treated with iodine, and, by means of many carefully executed operations, crystals of pure iodide of succinimide were obtained. This compound is very prone to decomposition, especially when heated, since it cannot bear 100° without very perceptible alteration; it is readily soluble in aceton and water, but difficultly in alcohol and ether. The author obtained, with difficulty, some other compounds, but not in a state of sufficient purity for analysis, and failed to substitute cyanogen for the atom of nitrogen which is combined with H in succinimide. Some experiments were also made relating to the action of vapours of bromine upon dried benzoate, oxalate, and succinate of silver; the products hereby obtained are bromo-benzoic acid, bromide of silver, and succinic acid.—*Ibid.*

Chemical Constitution of Pyroxyline (Gun-Cotton).—Dr. Gintl states that when gun-cotton, and also the collodion wool, are thoroughly moistened with concentrated sulphuric acid, after having been previously washed with water, so as to remove any matters present therein soluble in water, and lef quietly standing in a well-closed suitable vessel, the substances will be dissolved and converted into a colourless syrupy fluid. When this fluid is cautiously diluted with water, so as to prevent any increase of temperature, and next saturated with carbonate of baryta, and the excess of the latter salt, along with the sulphate of that base, are removed by filtration, there is obtained a perfectly colourless fluid, which, after having been evaporated *in vacuo* over sulphuric acid, leaves a gum-like mass, containing crystals of nitrate of baryta. The gum-like matter consists chiefly of the baryta salt of ligno-sulphuric acid (*holzschwefelsaure*), which may be obtained in free state by very cautious and careful removal of the baryta by means of dilute sulphuric acid. Ligno-sulphuric acid was first discovered by Braconnot.—*Zeitschrift fur Chemie.*

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Talk in the Studio.

THE DAVENPORT COLLECTION OF PRINTS.—Our readers will be glad to learn that the collection illustrative of the various processes employed in the production of prints and illustrations recently exhibited at the Society of Arts is in course of re-arrangement, and will shortly be opened to the public at the South Kensington Museum. A series of descriptive labels are being prepared, which will be attached to the examples, thus enabling visitors to understand the speciality of each representative. Photographers will thus have an opportunity at any time of inspecting examples of the various photo-mechanical processes which have been worked up to the present time.

MR. HENDERSON'S ENAMELS.—Mr. Henderson has recently been honoured by Her Majesty's command to exhibit his examples of ceramic photography to her at Osborne. Several specimens were purchased, and Mr. Henderson received orders to produce enamel prints from several negatives in Her Majesty's possession.

"STOLEN MOMENTS."—Mr. Hubbard writes to say that this picture is now obtained in two printings from three negatives.

CHARGE OF STEALING PHOTOGRAPHS.—At Brighton Police Court, on Friday, Gustave Musitano, 37, operator, in the service of Mr. J. E. Mayall, the well known photographer, was charged on remand with stealing photographs and various chemicals, the property of his master. Mr. Lamb prosecuted, and Mr. Mills defended. Mr. Mayall stated that prisoner had no right to have any of the four royal photographs in his possession before they were mounted. He never let any prints leave his establishment unless mounted on his card, except a proof sent to a person for whom it was taken, which might not be mounted. He had examined his stock of glass and chemicals, and had found a considerable deficiency. In answer to Mr. Mills, he stated that there was no particular mark on those four photographs by which he could identify them from those sent to the publisher for sale. There was nothing to prevent the men on the establishment having access to the glass and chemicals. William Grey, of Mr. Mayall's establishment, proved that, in consequence of instructions, he placed himself on the King's Road, on Sunday morning last, in a position to command a view of the printing-room. He saw two persons going from the printing-room to the lead flat, where the prints were exposed to the light. The prisoner and a man named Henwood slept on the premises, and had charge of them. Mr. Mills submitted to the Bench there was no evidence to lead a sensible jury to convict the prisoner of a felonious intent to appropriate Mr. Mayall's property. He was, however, committed for trial, bail being allowed.—Charles Henwood, 24, in Mr. Mayall's employ, was charged on remand with a similar offence, and was committed for trial, also bail allowed.—*Sussex Express.*

FACIAL EXPRESSION.—An evening contemporary says:—"What muscles are thrown into action in giving the different expressions to the countenance? This has been answered by Bell and many others. A curious mode of demonstrating the effect of each individual muscle has been hit upon by Dr. Duchenne, of Boulogne, the great electro-therapeutist. He has adopted the plan of 'Faradizing' the different muscles, and then photographing the face while the muscle is in contraction. His description of his results is reviewed in the current number of the American *Psychological Journal*, and several capital photographs from Duchenne's negatives accompany the review."

PERMEABILITY OF CAOUTCHOUC TUBES.—It may interest those who keep gas in india-rubber bags, and use vulcanized pipes, to know that M. Jouant states, in *Cosmos*, that, from a series of experiments he has made, the following conclusions may be drawn:—A vulcanized caoutchouc tube of 1·2 m.m. thickness, and having a surface of 33·60 sq. m.m, loses, in three days, by diffusion, 21·3 per cent. of hydrogen, while 11·2 per cent. of air has at the same time entered. That the non-vulcanized caoutchouc tubing is by far less permeable for gases is proved by the following facts:—A tube of the last-named substance, having 50 00 sq. m.m. surface, has been submitted to the same experiment during twenty-eight days, and lost during that time, by diffusion, 22·6 per cent. of hydrogen, while only 5·6 per cent. of atmospheric air entered the apparatus, which was arranged precisely alike for both experiments, and so constructed as to indicate any change of pressure going on internally, by means of manometer tubes. The permeability of caoutchouc for gases is a well-established fact, and a consequence of its peculiar structure.

TROPPMAN'S VALUATION OF HIS PORTRAIT.—Before his execution, Troppman wrote letters to two photographers. In one of them he says:—"As I desire to be agreeable to my family, I now propose to you to purchase from me the right of reproducing my likeness. But I tell you beforehand that I cannot make the bargain under 2,000 francs."

THE OXY-HYDROGEN LIGHT is now largely used in Paris for illuminated advertisements and theatrical purposes. Carts with metal reservoirs containing the compressed oxygen for the supply of customers may be seen in the streets. At the Gaité Theatre, which is one of the largest consumers, cylinders of magnesia or zirconia take the place of the lime cylinders ordinarily used for this light.—*Nature.*

A DELICATE TEST FOR ALCOHOL.—Those who are engaged in experiments on the excretion of ingested alcohol should employ the test now recommended by M. A. Lieben. A small quantity of the suspected liquid is introduced into a test-tube with some grains of iodine and a few drops of caustic soda. The mixture is heated slightly, but without boiling; if alcohol is present, a yellowish crystalline precipitate of *iodoform* is deposited.

DANGEROUS HAIR DYES.—Dr. Harris, the New York Sanitary Superintendent, in his first weekly report to the Board of Health in 1870, calls attention to cases of lead poisoning by means of various fashionable hair dyes and cosmetics. A letter from Dr. Sayre was read to the Board, informing them of three deaths from the use of a cosmetic. It was stated that iodide of potassium supplied the simplest test of the presence of the poison likely to be found in hair dyes and other such compounds.

LONDON WATER.—The following facts, from the last report of the Registrar-General, may interest photographers who use metropolitan waters:—The waters supplied by the metropolitan companies during the month of January contained (according to Professor Frankland's analysis) in 100,000 tons foreign solid matters amounting to 29 tons in the Chelsea water, 30 in the West Middlesex, 31 in the Southwark and Vauxhall, 31 in the Grand Junction, 29 in the Lambeth, 31 in the New River, 35 in the East London, and 39 in the Kent. 100,000 tons of the Chelsea water contained 20 tons, the West Middlesex 22 tons, and Southwark and Vauxhall 22 tons, the Grand Junction 22 tons, the Lambeth 19 tons, the New River 25 tons, the East London 26 tons, and the Kent 30 tons of carbonate of lime, or an equivalent quantity of other soap-destroying ingredients. Professor Frankland remarks:—"The floods in the Thames and Lea have brought these rivers to their *maximum* degree of winter pollution, and the resources of the water companies are strained to the utmost to deliver to their customers a supply which shall not be obviously repulsive. In these efforts the West Middlesex and New River Companies alone have been completely successful. The Kent Company, which derives its supply from deep wells in the chalk, has not to contend with these annually recurring difficulties caused by winter floods. With but very rare exceptions the water delivered by this company is, at all seasons, perfectly clear and transparent. Of the companies drawing from the Thames the West Middlesex alone delivered clear, that is, efficiently filtered water. The Chelsea and Lambeth Companies, who take their supply at a point below the junction of the muddy Mole with the Thames, supplied water of such a degree of turbidity as to render it entirely unfit for domestic use without previous filtration. The water delivered by the Southwark and Grand Junction Companies was slightly turbid. Living organisms were found in the suspended matter of the Chelsea, Southwark, and Grand Junction waters. Of the waters obtained from other sources, those delivered by the New River and Kent Companies were perfectly clear and transparent, while that supplied by the East London Company was very turbid, owing to the presence of much suspended brown matter full of living organisms. Among the latter vibrios were found. This is the first occasion since I have examined the London waters microscopically that these organisms, which are abundant in putrid sewage, have been met with in these waters. The organic carbon, organic nitrogen, and previous sewage or animal contamination in the East London Company's water are much higher than usual, the latter exceeding considerably that of any other water supplied to London. In consequence of the unsatisfactory condition of this water I collected a second sample on the 19th inst. This sample is perfectly clear and transparent, but, in other respects, so far as the analysis has proceeded, the matters in solution are present in substantially the same proportions. During the temporary stoppage of the main drainage at Abbey Mills a careful supervision of all underground storage reservoirs in the district will doubtless be exercised, lest any overflow or soakage of sewage should gain access to them. The water supplied by the Kent Company contained the smallest proportion of unoxodized organic elements."

To Correspondents.

W. M. Crouch.—The lens you mention will doubtless answer for architectural work if used with a moderately small stop. A half-plate lens might serve for producing card landscape pictures if you can get distance enough, but you must bear in mind that such a lens will include a very small amount of subject. 2. You can remove the accumulated drainings of the varnish by means of a piece of paper or card before it dries. 3. We have published many recipes for encaustic paste. The simplest consists in dissolving pure wax in benzole to a suitable consistency. That employed by M. Adam-Salomon is very excellent. You will find it stated on page 81 of our Year-Book for 1869.

Sulphate.—In referring to pyro and gold as producing a good tone in collodion prints, we meant that the image should be developed by means of a solution of pyrogallic acid, and subsequently toned by means of chloride of gold. The image so obtained is generally warmer and richer, as well as probably more permanent, than that obtained by iron development and sulphide of mercury toning. You will find a formula on page 112 of our recently issued Year-Book. Or you may use any good formula for pyrogallic acid development: say two grains of pyrogallic acid, one grain of citric acid, and twenty minims of glacial acetic acid. After development, fixing, and washing, tone by pouring over the film a neutral solution of chloride of gold containing two grains to an ounce. 2. We printed the formula as it appeared in our American contemporary, to which it was sent by M. Reutlinger, but we think it very probable that it is an error, and that instead of sodium, iodine was meant. Sodium is a very scarce metal, altogether unlikely to be used for such a purpose.

Anxious.—There are no existing canons which define or suggest the terms of engagement of an apprentice in photography; it is purely matter for arrangement in each individual case. It is not customary, however, to give any salary to an apprentice at the commencement. On the contrary, it is not unusual to demand a premium. In a case which came under our attention a short time ago, the apprenticeship was for four years. A premium of fifty pounds was paid; the first year's services received no remuneration; the second year twenty pounds, the third year thirty-five pounds, and the fourth year fifty pounds. In such a case the apprentice is first put to the lowest offices—cleaning glass, &c.—and finally taught all branches practised in the establishment. 2. The average salary of a young lady engaged in the reception room, keeping books, &c., is a guinea a week. We know some that receive a little more, and some a little less, but that is the average sum. 3. The best means of heating the dark room is by the use of hot water pipes. A gas stove may be used, with great care, to carry off the products of combustion, but we should scarcely recommend it. 4. A trap-door may be made very useful in ventilating dark rooms. The point to be secured is means for egress and ingress of air, which will, at the same time, exclude light. You will find the matter fully discussed in our Eleventh Volume. The Year-Book for 1868 has also an article on the subject.

Bingo.—A solution of isinglass in equal parts of spirits of wine and water is an excellent sizing medium for albuminized prints intended to be coloured in oil.

One who Tries.—You do not describe the character of the stain on the negative which produced the defective print enclosed, but its appearance is suggestive of the use of any old plate not really perfectly cleaned. Old glasses which have once been used for negatives are very treacherous. 2. Nitrate of ammonia in a printing bath is supposed to act chiefly mechanically, permitting the use of a weak bath without risk of dissolving the albumen. You will find various formulæ in our pages, in which the proportions vary from twenty grains per ounce to sixty grains.

J. Russell.—The letter was duly addressed and forwarded.

Collins.—Any good gelatine may be used in carbon printing. The Autotype Company use Nelson's, we believe. 2. We do not know the exact composition of the cleaning preparation sold as "diamond polish."

Citric Acid.—About fifty grains of protosulphate of iron to an ounce of water forms a developer as strong as can be used with advantage. You may possibly gain a slight increase of sensitiveness by adding about a grain of bromide of cadmium to each ounce of collodion. 2. Yes, you may use the ordinary iron developer. There is no necessity, in taking transparencies, to use such a small stop; with a larger stop you need not expose so long, and then the plates will not dry. We shall have pleasure in seeing the specimens.

H. S.—We presume that Dr. Monckhoven's cylinders of carbonate of magnesium will be supplied by the agent for his apparatus, Mr. Dallmeyer.

W. Adcock.—The lenses to which you refer are most excellent ones. 2. We believe it is possible and safe to get such lenses second-hand. If we are mistaken, the maker would examine and verify a second-hand one of his own make. 3. It is especially suited to architecture, groups, interiors, &c. 4. So far as we have had opportunity of judging, it is not superior to an ordinary single lens. We shall have pleasure in hearing of the success of your renewed attempt.

E. Fisher.—We prefer the first as most rapid. Both are double combinations.

Thomas Ayers.—Thanks. The diagram will require further explanation to make the matter clear.

W. J. A. G.—Thanks. We shall probably make some extracts.

J. Girault (Cannes).—For instantaneous stereo street views the No. 1B of the maker you name will answer well; but the ordinary focus, and not the long focus, will best serve your purpose. The No. 2B would be unnecessarily long focus and large size. The company you mention have used the No. 1B. A collodion of good body, containing two grains of iodide of ammonium, two and a half grains of iodide of cadmium, and one and a half or two grains of bromide of cadmium; a thirty-five-grain neutral bath; a fifty-grain developer, with twenty minims of glacial acetic acid: these, with good light and skilful manipulation, will aid you in securing instantaneous effects. You will find an article by Mr. Wilson on the subject in the Year-Book, which you have, doubtless, by this time received. We are obliged by your kind expressions of good opinion. We shall have pleasure at all times in giving you aid or advice.

Senrab Egroeg.—A quarter of a pound should have been stated. You had better sensitize the bromized collodion with the proportion of nitrate of silver recommended by the makers.

"Gleanings from Daily Work," and other articles in type, are compelled to stand over until our next.

Several Correspondents in our next.

Photographs Registered.

Mr. F. C. Varley, Chelsea,
Photograph of the Mother of General Garabaldi.

Messrs. W. and J. Blomfield, Hastings,
Photographic Group 7th Cinque Ports Artillery Volunteers.

Mr. H. Robins, Landport,
Two Photographs of Mr. Peabody's Mausoleum on board H.M.S. Monarch.

Mrs. M. Crear, Crieff,
Two Photographs of Mr. J. Cunningham.

Mr. Delany, Lowestoft,
Photograph of Elevation of House.

Mr. A. Abraham Pain, Ipswich,
Photograph of Diagram, &c.

Mr. G. T. Amos, Dover,
Photograph from Painting "After a Storm."

Messrs. Winter and Son, Beverley,
Four Photographs of General Martin's Tomb.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 596.—*February* 4, 1870.

CONTENTS.

PAGE
Mixed Iron and Pyrogallic Acid Solutions for Development ... 49
The Alkaline Nitrate Bath ... 50
Foreign Miscellanea ... 50
Gleanings from Daily Work. By Stellar Polaris ... 51
American Correspondence ... 52
Vignetting Portraits. By G. Robert Fitt ... 53
On Albumen as a Preliminary Coating for Dry Plates. By Hermann Krone ... 54
A Substitute for Plate-Cleaning. By Dr. Arno Grimm ... 54
On the Employment of Hœmatoxyline in Photography. By Dr. C. Tabensky ... 55
The Art and Science Claims of Photography ... 55
Green Glass in the Dark Room. By M Carey Lea ... 56
Correspondence.—Combination Printing—Hiring Apparatus—Mr. Gulliver's Camera without Dark Slide—Caution ... 57
Proceedings of Societies.—Liverpool Amateur Photographic Association—Oldham Photographic Society ... 58
Talk in the Studio ... 59
To Correspondents ... 60

MIXED IRON AND PYROGALLIC ACID SOLUTIONS FOR DEVELOPMENT.

The recognized distinction between iron and pyrogallic acid developers is the tendency of the former to give thin detailed images with short exposure, and of the latter to give dense, vigorous images, lacking detail with exposures considerably longer than those required when iron solutions are used. Circumstances may, of course, materially modify these tendencies; but these are the distinctive characteristics of the two developers. The prolonged exposure, and the lack of softness, which are concomitants of pyrogallic acid development, have, indeed, practically driven it out of use in the ordinary wet process, except as an after-intensifier. Photographers have often earnestly desired to be able to unite the two characteristics—to secure the short exposures and the detail of the one with the rich vigour, without reinforcement, of the other. This can, we know, be effected even by simple iron development, when all the attendant circumstances are conducive; but it is, nevertheless, very rarely accomplished, especial conditions of bath, collodion, lighting, and manipulation being necessary. Our present remarks have reference to the developer only, as an aid to the result in question.

Few pictures excited more interest, wonder, and admiration in the late Exhibition than the large instantaneous sea and cloud pictures of Colonel Stuart Wortley. Photographers generally are well aware of the difficulty of obtaining instantaneous photographs on very large plates. The pictures which Le Gray issued, about fifteen years ago, from instantaneous collodion negatives, on twelve by ten plates, were considered marvels at the time, and their fame has passed into tradition. Photographers further know that it requires much care and skill to obtain good negatives of clouds, to secure sufficient contrast, form, and modelling without any suggestion of hardness. The great distance of the objects, and consequent mass of atmospheric vapour and light between their intangible and changing forms, and frequent comparative uniformity of illumination, render necessary great care and precision of conditions to secure perfect results. Hence the question of process becomes an interesting one in relation to a difficult task accomplished with such complete success.

In an interesting article contributed to our Year-Book, Colonel Wortley tells us something of the operations employed, the chief element of success being regarded as appertaining to development. He marvels at the singular oversight, common among photographers, of adhering to one standard developing solution, which they rarely dream of modifying, however varying the conditions under which they work. It is impossible to vary the bath for each negative, and it is inconvenient to keep a great variety of collodions in use; but having at hand two or three stock solutions, it is possible to modify the developer almost *ad infinitum* in strength and character, with the smallest possible amount of trouble, and, by so doing, secure a large range of effect suitable to the varied subjects and changing conditions of light, &c., which must be dealt with in each day's operations.

Amongst the most valuable of the combinations possible in preparing developers, Colonel Wortley found a mixture of pyrogallic acid and iron solutions. The idea is not new, having several times been treated in these pages before; but there is a novel feature in the matter of considerable importance. The mixture of a solution of protosulphate of iron with a solution of pyrogallic acid generally issues at once in blackness, turbidity, and a precipitation of gallate of iron. To remedy this, various plans have been suggested: by the addition of nitric acid the precipitate is redissolved; by the addition of citric acid a similar result is produced; but in each case the amount of the acid necessary for dissolving the precipitate is sufficiently restraining in its action to neutralize the benefit otherwise gained, so that the exposure was not shorter than with the pyrogallic acid alone, and with nitric acid the intensity was often not greater than with the iron solution alone. The important fact which Colonel Wortley has discovered is the possibility of mixing the two solutions without producing turbidity or a precipitate. To secure this result it is simply necessary to employ the solutions for mixing quite fresh: it appears to be only when the solutions are oxidized that the precipitation takes place on mixing, and the rapidity of the decomposition is proportioned to the degree of oxidation of salts in solution. Colonel Wortley did not adhere to any specific proportions in making the mixture; but, bearing in mind the tendencies of each solution, he mixed them in such proportion as the subject in hand and the result required suggested.

It may be interesting, before concluding, to briefly restate one or two of the similar formulæ before proposed. About nine years ago, Mr. Tunny described, at the Photographic Society of Scotland, a developer which he regarded as the best extant. A fifteen-grain solution of protosulphate of iron and a two-grain solution of pyrogallic acid were mixed in equal proportions; this produces a precipitate. A strong solution of citric acid was added (a drop at a time) until the precipitate was dissolved and taken up. Shortly after that a correspondent of the Photographic News stated that a one-grain solution of pyrogallic acid, containing one grain of citric acid and two grains of protosulphate of iron, gave him admirable results. Another correspondent stated that he had for years used, with success, a solution composed as follows:—

Protosulphate of iron	1 ounce
Gallic acid	40 grains
Nitric acid	10 minims
Water	10 ounces.

In all these we have mentioned, and in some others of similar character, citric acid or nitric acid was employed to redissolve the precipitate of gallate of iron; and although they were stated to possess many good qualities, it is clear that they must have lacked some of the qualities of a simple mixture of the two developing agents employed in Col. Wortley's instantaneous marine pictures with such excellent effect.

THE ALKALINE NITRATE BATH.

Soon after Mr. McLachlan made known his experiments with alkaline nitrate baths, Mr. Newton, an energetic American experimentalist, devoted considerable attention to the subject, and has reported results from time to time. At a recent meeting of the Photographic Section of the American Institute, as we learn from our Philadelphia contemporary, he again brought the subject under the attention of members.

He said that in continuing his experiments upon the alkaline bath, he had found that results equally good were had with such a bath in half the time of exposure comparatively to the acid bath. He exposed, in a flat glass bottle tightly corked, crystals of nitrate of silver to the action of sunlight for two months; these, darkened to greyish-blue colour, were subsequently dissolved in distilled water, and the bath so made was positively alkaline, and gave results he thought far better than could be had from any acid bath.

Prof. S. D. Tillman remarked that the discovery made by Mr. Newton was singular, and likely to lead to important results. Assuming that the proof is positive that crystals of pure nitrate of silver, when exposed to direct sunlight for a given time, will be changed in appearance and in character also, since an aqueous solution of this neutral salt after such treatment has been shown to be decidedly alkaline, the manner of this change becomes a question of great interest, because it differs from any chemical action before observed. He did not believe the alkalinity of the compound was due to a single element, but was the result of the unusual combination of two elements, resembling somewhat the action by which the volatile alkali ammonia is produced by the union of three atoms of hydrogen with one of nitrogen. The body under consideration contains nitrogen, which is a triad, its least saturating power being triatomic, and, as seen in the case of ammonia, one atom of it is capable of holding three atoms of the monad element, hydrogen. The strongest reason for supposing that silver may play the same part as hydrogen is that both are monatomic. Only nine other elements belong to this class of monads, namely, fluorine, chlorine, bromine, and iodine among the electro negatives, and lithium, sodium, potassium, rubidium, and cœsium among the electro positive simple bodies. If we suppose that the presence of water is necessary to this change, we may represent the new combination by following the example of Berzelius, who regarded even an aqueous solution of ammonia as the oxide of ammonium. An atom of water and an atomoid nitrate of silver belong to the same type, and are expressed by

$$\left.\begin{array}{l}H\\H\end{array}\right\}O \qquad \text{and} \qquad \left.\begin{array}{l}NO_2\\Ag\end{array}\right\}O$$

in which the atomic weight of oxygen is doubled (16); and these same elements, after the change which produces alkaline characteristics, may be represented by the tetrad thus:

$$\left.\begin{array}{l}NO_2\\H\\H\\Ag\end{array}\right\}O_2$$

It may be observed here, that a change in chemical structure does not necessarily involve a change in chemical functions, but the typical formula expresses more clearly the new part which it is now supposed may be played by silver, and which, if confirmed by further experiments, will become the starting-point in a new series of discoveries.

Mr. Newton further remarked that an increase of alkalinity did not give increased sensitiveness. The bath should be faintly alkaline.

Mr. Chapman stated that he had made many experiments with an alkaline bath, and was fully satisfied that it would not answer to use such in cases when plates had to be kept long after removal from the bath and before the exposure; such, he was confident, would always fog. He stated that he had made baths alkaline by the use of cyanide.

Mr. Newton was of the opinion that if he had used ammonia, or sunned his baths, such results would not have followed. He believed that the fog in Mr. Chapman's case was owing to a deposit of salts from the cyanide upon the partly-dried plate.

In the February number of our Philadelphia contemporary, with early slips of which we have been courteously supplied, Mr. P. Hawk, of Hamilton, states some very interesting experience, which is confirmatory of Mr. McLachlan's statements. Mr. Hawk says:—

"I proceed as follows:—

Bath for Negatives.

Nitrate of silver ... ... 4 ounces
Pure water ... ... 2 ,,

If the silver does not all dissolve, add a little more water. After it is all dissolved, add of a saturated solution of bicarbonate of soda, twenty drops; shake well, and set in the sun two months in a clean glass bottle. After sunning two months, add forty-eight ounces of water, and sun two or three days longer; then filter, and it is ready to produce clean negatives, which will not require mountains of bichloride of mercury to build them up. If they are not as strong as you like, a few drops of silver and iron are all that is necessary to make a first-rate negative without any acid in the developer. I use for developer the double salt of iron and ammonia, and no acid. The above bath also makes a very fine clean positive or ferrotype, but not quite as good as an acid bath with nitrate of lead in the developer.

"To keep this bath in working order, add of a sixty-grain solution to keep up the strength made the same as the bath. Add none that has not been purified. One ounce of a solution of common silver will spoil a forty-ounce solution, and set it to fogging. No iodide of any kind.

"When it becomes charged with alcohol, boil it down to evaporate it, then add water to make it forty grains strong to the ounce, and add two drachms of a saturated solution of permanganate of potash to make it alkaline again, and set in the sun for a week; try and keep it alkaline by using a neutral collodion and well washed glass, if you clean the glass with chromic acid; I use none but albuminized glass well washed."

Foreign Miscellanea.

A photographic society has just been formed in Dresden, under very favourable auspices. On the list of members are to be found the well-known names of Krone, Hahn, Hanfstængl, &c., the first-named gentleman being president, and likewise editor of the monthly journal of the society, *Helios.* This makes the sixth photographic journal published in Germany.

Dr. Van Monckhoven has repeated his lecture upon a new artificial light before the members of the French Photographic Society, and, according to the *Moniteur de la Photographie,* with success equal to that which attended him in London. The Paris photographers seem fully to appreciate the importance of Dr. Monckhoven's enlarging apparatus.

M. Ducos du Hauron, whose researches in reference to photography in colours was published last year, is said to be making rapid strides towards the perfection of his method of working. He will probably submit the results of his labours during the last six months to the inspection of the members of the French Photographic Society.

Some successful pictures of the recent festivities at the Suez Canal have been taken by M. Hammerschmidt, a Berlin photographer; proofs of the same were exhibited at the last meeting of the Society for the Advancement of Photography at Berlin.

Licht advises its readers during the cold weather to be careful in ascertaining that the albuminized paper is not of a higher temperature than the printing-frame when placed therein, otherwise the paper, coming into contact with the cold surface of the negative, cockles up and otherwise renders the prints defective.

A discussion has taken place at the Berlin Society in reference to the most suitable height for placing the lens in portrait photography, the opinions expressed being to the effect that the camera should always, if possible, be placed in a horizontal position, so as to avoid errors of perspective or exaggerations in the background, and at such a height that the principal part of the object occupies the centre of the field.

MM. Loescher and Petsch, whose successful portraiture has won them a position in Berlin similar to that enjoyed by Reutlinger at Paris, have just completed a new studio of the most magnificent proportions. It is to be fitted with all the modern appliances, and to be in every respect a model establishment.

The best antidote for pyrogallic acid, whose poisonous character has recently been pointed out, is oil of turpentine.

A simple and efficient way of dismounting retouched photographs which it is feared may suffer from contact with water, has been suggested by M. Grasshoff. It is to coat the picture with a little diluted collodion before proceeding to remove it from the mount.

At the last meeting of the Vienna Society, Professor Pisko delivered a lecture on Becquerel's optical researches.

Dr. Liesegang describes a method of developing carbon prints without the employment of hot water. He uses for the purpose acetic acid, which, as is well known, is capable of dissolving gelatine; the printed tissue, transferred to india-rubber, is placed in this acid, and the image developed by means of a soft brush. Although successful results are obtainable in this way without difficulty, Dr. Liesegang does not recommend the method, as the fumes of the acid exert an injurious effect. He points out, however, that there are probably other liquids to be found possessed of the same qualifications without the drawback just mentioned.

In regard to carbon printing, both in France and Germany, operators appear still to cling to the earlier methods of working, employing either the film of india-rubber or coagulated albumen. Mr. Johnson's simplified method of working is probably not very generally known, or it is possible that facilities do not exist for practising it, being protected by patent.

M. Julius Kruger publishes an article in the *Photographisches Archiv*, in which he calls into question the advisability of employing washed albuminized paper for printing, as proposed by M. Baden, of Altona.

In Weimar a photolithographic establishment has just been started, through the influence of several of the gentry in that town.

M. Harnecker, of Wriezen, exhibited last month to the members of the Society for the Advancement of Photography at Berlin a new enlarging apparatus. It would appear to be somewhat similar in character to that of Dr. Van Monckhoven's. The light is produced by a magnesia cylinder heated by means of an oxyhydrogen flame.

M. Bontemps has communicated to the Academy of Sciences the results of a series of researches undertaken by him upon the behaviour of glass when exposed to light for prolonged periods. He cited and confirmed the results obtained by Mr. Thomas Gaffield, of Boston.

Another collodion paper is being manufactured by MM. Geymet and Alker, which is recommended for the preparation of negatives, enamel photographs, and other purposes.

The firm of MM. Sander and Risse, of Norden, who had recently taken up the preparation of collodio-chloride paper, has been dissolved, the senior partner removing to Hamm, in Prussia, where the manufacture of the paper will be continued.

M. V. Angerer has secured a series of large-sized landscape views of the Tyrol and Salzkammergut, which, at a recent meeting of the Vienna Society, attracted considerable attention. On the same occasion were exhibited a set of landscapes from the studio of Mr. Francis Bedford, who had presented the same to that Society.

MM. Ohm and Grossman are popularizing their "Lichtdruck" process in the same manner as M. Albert, viz., by imparting instruction to pupils at a certain fixed rate; already some fourteen or fifteen gentlemen have availed themselves of the opportunity of learning the process.

Many of the articles of the Year-Book for 1870 already appear translated in the foreign journals.

GLEANINGS FROM DAILY WORK.—No. 1.

BY STELLAR POLARIS.

Silver Paint for Retouching Negatives.—Spectrum Analysis.—Permanent Sensitive Paper.

Always mix two or more peoples' ideas when practicable. This is an excellent maxim at the beginning of a new year. I very often find two people working either in the same or different directions, who throw out ideas often totally disconnected with each other, which, when combined by a third party, give rise to new features, and, not unfrequently, form the foundation of almost a new industry. In illustration: the invention, or, at least, the perfecting, of the railway locomotive by Stephenson, is said to have been mainly due to two suggestions made by different people, but combined by the great man whose name is inseparably connected with their adoption. One man turned the waste steam of his engine into the chimney, and another adopted a pair of bellows to blow up the fire. Stephenson "saw the point," and turned the nozzle of the waste steam-pipe upwards; hence the "*steam blast*," and hence, also, the *modern locomotive*. To compare exceeding small matters with those of much moment: a little plan has just lately suggested itself to me of taking some good out of two suggestions for using *silver* as the paint for retouching negatives. Mr. Croughton, in his excellent article on retouching negatives, suggests (as has, I believe, been done before) the use of "ground films," which are to be ground up on the palette with gum-water. Mr. Burgess, also, some time ago, suggested the use of precipitated silver, which was, however, to be mixed with *varnish*, and this moistened, as used, with a brush dipped in alcohol, &c. Now the combination I have to suggest is, use the precipitated silver of Mr. Burgess and the gum-grinding of Mr. Croughton, by which the most perfect pigment is to be made. Here is the method I have adopted:—Take a two-ounce glass measure, fill it with old bath solution (the strength is a matter of no moment); put in next a little pyrogallic acid—the exact amount, so that you put enough, does not matter; the result is the immediate precipitation of silver. In a few minutes stir the whole well up, and throw it upon a filter; when the liquor has run through, fill up the filter again with water; repeat this two or three times; then set the filter aside. In a day or so, when dry, carefully remove the powder from the filter by some little scraping instrument. Put it away for future use. A small portion of this is prepared for use at a time, by being ground on the palette with a little gum-water, the less the better. I work the pigment with a knife, giving a gentle circular motion, and keeping it up *till the whole dries*; the gradual thickening of the gum solution as the water evaporates seems to assist in breaking up the particles to an extreme state of fineness. This pigment can be used with water in the usual way, but I think care should be taken *not* to suck the brush, as a daily dose (people who retouch negatives at all generally do so every day, I suppose) of silver in a state of fine powder might lead to serious consequences. This suggestion may be laughed at by some who do not believe in homœopathy, but I hold it none the less true, that daily repeated doses, of apparently harmless things, may be the cause of disease.

Touching upon homœopathy reminds me of a very interesting branch of study—spectrum analysis. I think, if I may judge from the few suggestions of Mr. Mayall in the Year-Book, there is a great future for this in photography. The test seems so exceedingly delicate, and, moreover, so easily applied, that it strikes me the sooner it comes into general use the better. Mind, I do not mean that every photographer is to go and spend all his time and money on the prosecution of the most delicate and refined scientific research ; but I do mean that those whose business it is to supply really reliable chemicals should avail themselves of the most accurate means within their reach to determine the purity, or, at any rate, to measure the amount of adulteration, of the preparations they sell.

There are several makers now of albuminized paper which will keep ready sensitized for a long time. This, it appears to me, is a process which will either succeed completely, or, what will, I fear, be far more likely, fail as completely. This is the light in which I view the matter. It takes only a short time to prepare the albumiuized paper for a day's work, and, as it does not employ very skilled labour to attend to it, it does not cost much for the work done ; the amount of silver used is, or, at any rate, should be, the same, whether bought on the paper, as in sensitive paper, or separate, as is the usual plan. I say the amount *used* should be the same ; I mean by used, consumed in the production of the picture. If a *strong* bath be used in the preparation of the ready sensitized paper, then the washings, &c., and clippings will be worth much ; if, on the other hand, a weak bath be used, the paper should be comparatively cheaper.

So, then, counting the cost of the two methods as the same (and I think competition would certainly, in time, render the price the same in the both cases, should the method become universally adopted), the advantages of the new process do not seem very apparent, for there is first to be answered a long series of questions as to the *practical* quality of the results, the time taken to print, and a variety of other matters, a doubtful answer to any one of which would, I am afraid, condemn the whole thing. One thing I confess, that, on the other hand, there is a possibility of a glorious success for the methods in question, for once show us the results as good or better, the keeping qualities really to be thoroughly trusted, the price the same as it was in the old method, then—but, I venture to think, not till then—will the ready sensitized paper come into general use. It would, certainly, if we could absolutely rely upon the result, be a matter of convenience to do away with the sensitizing process ; but this process is in itself so easy, and so soon done, that no photographer would make any sacrifice of quality or money to be rid of it ; such, at least, is my opinion.

I do not think Mr. Dunmore has, in his paper on photographing birds, thrown much light on the subject. No doubt, however, Messrs. Robinson and Cherrill will feel highly flattered by his incidental reference to their great skill in ornithological drawing. One thing strikes me as rather curious *apropos* of this subject : Mr. Dunmore says that the landscape negative should, to secure the best result, be taken on a *dry plate*. The "Sea Gulls" (the picture about which all this discussion has arisen) has in it no *landscape* at all, and it could not, therefore, be done on a dry plate. I do not, at least, know any dry-plate process which would give a presentable picture of waves in motion. You may remember, some time ago, certain *savans* (?) undertaking a series of experiments to find out which was the most sensitive process, wet collodion or dry. As the result of this investigation was never published, we may suppose the learned experimenters discovered, possibly much to their surprise, that, after all, the generally-received opinion, that wet collodion *is* a little more sensitive than dry, was the correct one. It is curious, however, that the result of the trial was never made public. But, so far as I know, not only has this trial failed to bring forward any new fact as to the rapidity of dry plates, but, also, all attempts hitherto to produce a really instantaneous dry process have been *miserable failures*. However, in one thing I quite agree with Mr. Dunmore : most of the suggestions made in reference to the gulls are "great rubbish."

AMERICAN CORRESPONDENCE.

Monckhoven's New Artificial Light—Studio set on Fire by a Solar Camera—Pinholes and Spots in the Film—Pyrogallic and Citric Acid Intensifier—Cyanide Poisoning—Ready Sensitized Papers—Revival in Photography—Photo-Mechanics.

Monckhoven's New Artificial Light, &c.—Those of us who are favoured with the weekly visitation of the Photographic News have been much interested in Dr. Van Monckhoven's new artificial light, and read the account of his successful demonstration before your Society with a great deal of satisfaction. Two years ago matters of that nature would have interested photographers in this latitude but little. We then had cold, clear weather during nearly the whole of our winter, with much snow and freezing. Now our climate seems to have changed greatly. Last winter, and this, so far, have been astonishingly moderate ; we have had scarcely a bit of snow ; the ground is unfrozen, and, per consequence, the sky is almost continually cloudy. This state of affairs is of course fatal to enlarging by means of the solar camera, and if it is to continue, this country will be a fine field for the development of Monckhoven's new artificial light and enlarging apparatus. He is arranging to have them introduced here already, and I hope soon to see a practical demonstration of their excellences. With us, February and June are usually the most favourable for enlarging. The other months are apt to be cloudy, showery, or windy.

Studio set on Fire by the Solar Camera.—While on the subject of solar cameras, I would raise a caution to the careless. A few weeks ago a correspondent came near losing his establishment by fire, the result of leaving the lens of his solar camera exposed to the sun. The day was cloudy, and thinking it would so continue, he carelessly left his lens exposed. The sun came out, however, about the middle of the afternoon, and, shining obliquely upon the lens, the warm rays soon began to tell upon the woodwork inside, and shortly the enlarging room was a mass of flames. The astonished and careless photographer was attracted by the crackling of the wood, and barely succeeded, with his assistants, in suppressing the mischief. Fearing that he may again be so careless, he has had a sheet-iron cone made to fit around the lens inside, and taper inwards. This, as you will see, will prevent the rays of the sun from reaching the wood-work, even should the lens be left exposed.

Pinholes and Spots in the Film.—These troublesome little visitors often come upon us when we congratulate ourselves mentally that our chemicals show the least disposition to be obstreperous. They are as teetotally depraved as mosquitos at the seaside, and ten times more annoying and vexatious. What causes them is a standing question, and what will cure them is another. There are many *known* causes, and as many known cures. Again, as many known *guesses* as to their cause and cure. Very often parties will search and renovate their whole dark room, and yet find not the source of the evil. Such was the case of a correspondent some time ago. That the trouble existed, he had most grievous evidence. The innocent bath, the spotless collodion, and the immaculate developer, all came in for their share of censure. Books were read, friends consulted, new mixtures made, and—the negatives continued full of pinholes, the iron pictures covered with white spots. Finally, a lead faucet in the tank from which the water supply was taken was arraigned as the criminal, and found guilty. The faucet had become old and loose, and at each turn some particles of lead were ground off and deposited upon the plate being washed under it. Result, as described.

Pyrogallic and Citric Acid Intensifier.—Mr. F. M. Spencer furnishes me with the following method of obtaining intensity, which he has practised two years with great satisfaction. Three solutions are made, viz.:—

No. 1.	
Pyrogallic acid	12 grains
Citric acid	20 "
Water	1 ounce.
No. 2.	
No. 1.	1 part
Water	2 parts.
No. 3.	
Nitrate of silver	15 grains
Water	1 ounce.

If there is lack of detail in the deep shadows, it is used before fixing. If the shadows are well cleared, after-fixing is preferred, for the intensification; for then the action can be more readily localized. Pour a little of No. 2 into a small wide-mouthed bottle, and drop in a few drops of No. 3. Pour on and off the negative, allowing the solution to fall nearest where the most intensification is needed. The practice of "doctoring" negatives is one to be deprecated as a rule. I know there are some good men who intensify as a rule; but I look upon them very much as I do upon those who are in the habit of "stimulating" themselves: it is a *disease*—a *sickness*—and hard to break one's self of after it becomes in a measure chronic.

Cyanide Poisoning.—A *disease* of a kindred nature enslaves a great many photographers who will persist in the use of cyanide, a disease, however, more painful in its effects than that of habitual intensifying. There are those who to-day are suffering intensely for their imprudence, and if there be any such among the readers of the News, let them try the following:—When about to retire, bandage the affected parts with white, soft muslin saturated with *rain-water;* keep the bandages wet all night. Very painful sores have been cured in three or four nights by this means. So asserts an old man who has suffered and been cured as above.

Ready Sensitized Papers.—I have noticed the "discovery" of many ready sensitized papers of late, though I have not had the opportunity of trying any af them since Obernetter sent me a few sheets of his excellent collodio-chloride paper. I am not, therefore, able to speak of them from experience, and only allude to them to name an ingenious suggestion of one of my old amateur friends, Robert Shriver, Esq. Noticing the advent of one of the ready sensitized class of papers, which is washed after silvering, and subjected to the fumes of ammonia during printing, Mr. Shriver says, "It strikes me that the same idea ought to be applied to *dry plates* with success. Wash and dry without preservative, fume before or during exposure, soak thoroughly, and develop with retarded iron developer." I do not remember having heard of this being tried, and submit it to your dry-plate readers.

Revival in Photography.—Do you not look back with a sigh to the good old times—say eight to ten years ago—when we had a great many more active, skilful amateurs than we now have? In this country we had our "Amateur Exchange Club," our annual gatherings, &c., as you have occasionally in England. Many tired of their "hobby," however, and left the ranks. But I am happy to notice that their old love is returning to a number of them. They are astonished, when they look over the current photographic literature, to find "how photography had grown." They are lost in a measure, and resolve to "begin again, and work up to it." This is a cheerful sign.

Photographic Mechanics, as I have before said, continues to absorb attention here, and I have several novelties to announce as having been recently patented in this country.

The first is a pressure frame, the invention of Mr. Byron Reed, Kokomo, Ind. It is so arranged that any number of sheets may be placed in it at a time, and printed without having to trouble to place a sheet in every time a print is made. This is accomplished by having a slip of metal at one side, furnished with points, on which the sheets are fastened, and kept in place by a spring. This part is then hinged to the part holding the negative. When a print is made, the frame is opened, the sheet bearing the print is torn out, the frame closed, and the next print is made. I send you drawings of the frame, which you can publish if you see best. When prints have to be counted, or parties have to print at considerable distance from their silvering-room, this will save much time.

Messrs. J. and C. Paxson have received a patent for improvements in solar cameras, which are, broadly, as follows:—

1. In providing the negative holder with springs for clasping the negative in conjunction with clamping strips, whereby a single holder is adapted to negatives of different sizes.

2. In the employment of a bellows in the vignetting device, whereby the vignetting lens is adjusted altitudinally, to increase or diminish the size of the picture, as may be desired.

3. In combining and arranging vertical screw rods with the printing board, for elevating and depressing the same, said rods being provided with grooved wheels on their upper ends, around which an endless chain is placed, so that by pulling the chain in one direction the rods revolve simultaneously for elevating the printing board, or, by pulling the other way, they lower it; thus the adjustment is easily effected.

4. In constructing the larger part of the camera box of a framework, and canvas stretched over the same. The canvas is painted, and thus a lighter apparatus is had, and one not apt to crack in the sun, or to be cracked by the heat.—Very truly yours, Edward L. Wilson.

Philadelphia, January 18th, 1870.

VIGNETTING PORTRAITS.

BY G. ROBERT FITT.

Having read in the News of last week an interesting discussion on the best way of vignetting portraits, I am tempted to give a few hints as to what I think the best method of producing that which, when executed with taste and judgment, is, in my opinion, the most elegant and effective form of photographic portraiture.

I may begin by saying that I believe much more harm than good has been done by the use of the abominations which, on the *lucus a non lucendo* principle, are termed *vignetting glasses.*

In the first place, the result produced by them is hardly worthy the name of vignette, being usually an oval so abrupt and ugly in shape, as to be much inferior to that obtained by interposing an oval mask between the paper and the negative. Fancy one of Richmond's crayons with a definite oval dark background, instead of the beautiful, slightly-indicated hatching, which he so well knows how to apply to suit the form of each individual figure.

Secondly, it is wrong in principle to interpose an extra medium, having the effect of lengthening the time of printing, in the very case where rapidity of printing is the one all-important necessity for preserving purity of tone and lights. Mr. Blanchard's otherwise excellent plan of using tracing paper as a medium is open to this latter objection.

Many (perhaps most) photographers overlook or neglect one important point, viz., that negatives intended for vignetting should always be taken with a *light* background; half the difficulty of obtaining a delicate gradation depends on the tone of ground, and is to be obviated by the observance of this rule.

Now, having your negatives of, say, 7¼ by 4½, two busts on each plate, my plan is this:—I use frames having a depth of three-quarters to one inch from surface of negative to outside of frame; a piece of flat sheet zinc is cut, the size of the outside measurement of the frame. In this are cut two, not oval, but pear shaped openings, having their centres at a distance equal to the distance of the centres of the busts. (I have a number of these plates, so as to have a slight variety in distances of centres.) I then have the margins of the apertures *serrated.*

In most cases this plate, laid over a negative on the outside of the frame, about three-quarters of an inch from the glass, gives an admirable gradation; the printing takes *no longer* than ordinary printing in diffused light; the metal is not liable to injury as cardboard is, and in windy weather an American clip at either end secures from shifting; but a slight change of position during the printing may be advantageously made at times, to give increased softness.

If one side of the zinc be coated with turpentine black (dead) you may vary the effect, for the bright surface, being downwards, reflects light, and gives the maximum of softness; if the black be downwards, a somewhat harder line results, if it be needed. Cotton wool will be seldom required; but if it be, the rough serrated metal edges afford a ready means of retaining bits of it in any desired position.

Try this plan, and you will need no other, I am convinced. Before I hit upon this I never dreamed of using the so-called vignetting glasses as they are made, but I had a mixture of chalk and water, with a little gum (London milk is not thick enough); and when putting the frame down to print, I stippled this on the clear part of the glass where needed, to break the oval line, *e. g.*, over the shoulders of a portrait. If in the progress of printing any modification were needed, this could be scraped off, or more could be added where needed. But with the zinc and diffused-light printing you can, with fairly suitable negatives, get absolute uniformity.

ON ALBUMEN AS A PRELIMINARY COATING FOR DRY PLATES.

BY HERMANN KRONE.*

The frequent appearance of air-bubbles and similar defects in Taupenot and other dry plates has caused one to search diligently for suitable material for the preliminary coating of the plate; but, although many substances have been experimented upon, such as gelatine, gum, dextrine, caseine, &c., none of these have produced better results than albumen. Under normal conditions of temperature, and the usual hygroscopic state of the atmosphere, albumen answers the purpose of a preliminary coating admirably, but, unfortunately, this is not the case in the extraordinary changes of temperature, &c., to which a landscape photographer is sometimes subjected.

In a recent campaign, undertaken the year before last, in Silesia, I was on one occasion compelled, among other various localities, to make use of a damp cellar as a laboratory for the preparation and development of my dry plates. My stock of ready sensitized plates, all prepared with albumen, were kept in this apartment, and I returned every night to develop such plates as I had exposed during the daytime.

On the first night all my negatives were, as usual, successful, but on the next evening fatal indications already became apparent, and as soon as I commenced to employ the intensifier the image appeared to sink right into or through the films, presenting the appearance somewhat of a picture which has been absorbed by blotting-paper. The third day my results were even worse, and convinced me that it was impossible to employ any more plates from the same stock, a conclusion I arrived at only after carefully drying and warming them. The preliminary coating of albumen had been attacked by the damp air of the cellar, which had penetrated through the porous collodion, and thus endowed the films with capillary action, causing the reduced silver to penetrate to the glass surface. Acting upon this theory, I at once discovered a very simple and efficient remedy. The albumen solution I employ is a very dilute one, being prepared by mixing one cubic centimetre of albumen with five-hundred cubic centimetres of filtered water, together with one or two cub. cents. of ammonia, the mixture being well shaken up, allowed to stand a day, and then decanted; the solution thus prepared, which I find to be of sufficient consistence, is poured upon the upper portion of a clean plate, and, with the aid of a glass rod, spread over the same as quickly as possible, the superfluous liquid being allowed to drain off into another bottle fitted with a funnel and sponge. The plate is then placed in a sloping position in a drying-box, and, when perfectly dry, laid upon a heated iron, protected with a double fold of filter-paper, until it reaches a temperature scarcely supportable by the bare hand. In this way the albumen film is completely coagulated, and rendered capable of withstanding the action of a damp atmosphere. None of my plates prepared in this manner suffered from storage in the cellar above referred to, nor from artificially prepared damp atmospheres with which they were placed in contact.

It remains to be mentioned that after the application of the preliminary coating, the further preparation of the plates with collodion should be undertaken without delay, as any condensation of moisture or other deposit upon the albumen film militates against the success of the plates.

A SUBSTITUTE FOR PLATE-CLEANING.

BY DR. ARNO GRIMM.*

All cleaning of plates is unnecessary if a small quantity of castor oil be added to the collodion; the latter will then adhere uniformly over the surface of the dry and dust-free glass plate, without the risk of any so-called cleaning stains being formed. The amount of castor oil to be added is regulated according to the consistence of the collodion, but no particular care in measuring or weighing is necessary in the matter; as a general rule, a teaspoonful of castor oil will be sufficient for a pound of iodized collodion.

I will take the opportunity of adding here a few words in regard to the manner in which I arrived at this simple modification. In earlier times, the necessity of cleaning plates was to me a serious drawback in the practice of photography; and when I first saw the suggestion of M. Wenderoth to polish the plates with wax, I at once gave the same a trial, although it was out of my power, as also out of that of a practised colleague of mine, to obtain a film of sufficient delicacy and uniformity. Gelatine and albumen solutions were next experimented with, but their employment appeared to me attended with much uncertainty, and, moreover, traces of the last wipings of the plate often became visible on development. My experiments with the Wenderoth process, nevertheless, taught me that, notwithstanding the difficulties of application, wax was, indeed, a suitable material for a preliminary coating; and for this reason I prepared a very dilute alcohol ether solution of the material for the treatment of my plates, the dullness of the film on drying being prevented by rapid drying at the fire. Subsequently, I found that spermaceti was more suitable for the purpose, as it dissolves rapidly, and, at the same time, very perfectly.

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* *Helios*, the organ of the Dresden Photographic Society.

* *Photographisches Archiv.*

The result of working with both these solutions was satisfactory, if I except the destruction of an occasional plate from over-heating, and the inability of successfully coating very large surfaces. Difficulties arising from warming the plates were met by adding an exceedingly small dose of camphor to the absolute ether; but, unfortunately, even the best ether does not evaporate in a sufficiently uniform manner, and, where the last drops disappear, damaging circular spots are sure to become apparent. As a matter of course, as soon as leather collodion was discovered, I made further experiments with that substance, and found it, in many respects, suitable for preliminary coatings, although not altogether perfection, for I discovered that not only must it be quite free from water—as in that case there are apparent in the film fine parallel lines—but during the process of drying the deposition of dust particles upon its surface is exceedingly difficult to prevent. From leather collodion, however, there was but one step necessary to the process mentioned at the commencement of this article, a method which I believe will form a happy ending to all my troubles.

ON THE EMPLOYMENT OF HŒMATOXYLINE IN PHOTOGRAPHY.

BY DR. C. TABENSKY.*

As Erdmann and Hesse have already made known, hœmatoxyline possesses the capability of reducing silver salts, and of colouring them red in sunlight; and inasmuch as Professor Von Babo hereupon expressed his opinion that this compound might find an application in photography, a few experiments in this direction have been made in the laboratory by the present writer.

The hœmatoxyline was prepared in the way described by Erdmann; viz., by leaving the commercial extract of logwood—previously mixed with quartz-sand, to prevent agglomeration—in contact with five or six times its volume of ether for several days, agitating from time to time; then decanting the brownish-yellow solution, distilling off the ether, mixing the syrupy residue with water, and leaving it to itself in a loosely-covered vessel. If no water were added, the liquid would simply dry up to a gummy mass; but if a sufficient quantity of water is present, the hœmatoxyline crystallizes in the course of a few days. The crystals are washed with water, and freed from adhering mother liquor by pressure between filtering-paper. The crystals dissolve slowly in cold water, but easily in alcohol and ether.

The hœmatoxyline was purified by repeated recrystallization in alcohol; and, finally, by the addition of a few drops of acid sulphate of soda. Two plates were prepared in identically the same manner, and exposed to light, and then one of them treated with pyrogallic acid, and the other with hœmatoxyline solution. In the latter instance, the picture was quite as clearly and vigorously developed as in the former, thus showing that the hœmatoxyline may be employed in photography with advantage. The formula adopted by the writer was as follows:—

Hœmatoxyline	1 part
Distilled water	160 parts
Acetic acid	44 „

(of 33° strength).

The addition of a small quantity of glycerine proved advantageous.

THE ART AND SCIENCE CLAIMS OF PHOTOGRAPHY.

A recent lecture on this subject, given by Mr. T. W. Coffin at the Plymouth Institution, was unusually felicitous in its statement of the facts of photographic history, and in the comments and arguments based thereon. We subjoin an abstract condensed from a report in one of the local papers.

The lecturer commenced by affirming his firm conviction that the art progress of photography has been fully commensurate, if it has not surpassed, the expectations formed in advance. He then proceeded:—

Photography, as we now practise it, is exclusively an English invention. With the strange coincidence which has often characterized the history of invention, whilst an experiment for the production of sun pictures was in progress in France, a series of experiments with the same end, but by essentially different means, were progressing independently in this country, and Mr. Fox Talbot read a paper before the Royal Society on 31st January, 1839, six months earlier than the publication of the Daguerreotype process. It had its parentage in art not less than in science, and in its early days its chief patrons were found in art circles. Since then its capacity has been developed by the scientific experimentalist, and now the painter uses it to shorten his labours.

The present depression felt by those who practise the art is in a manner caused by the fact that photographers as a body have not set up their standard of excellence sufficiently high. This may arise from two causes: first, from the fact that "a miscellaneous audience is best conciliated by that sort of talent which reflects the average mind;" secondly, in most cases the professional photographer has taken up photography as a profession, and so long as it pays, he is content. Thousands without any knowledge of art, with no feeling for the beautiful, and who are in many cases entirely ignorant of the optical properties of their lenses, arrogate to themselves the title of artist; not because they are worthy to bear it, but because they are ignorant of its true signification and requirements. However, we must not forget that the public themselves can now exert a very extended influence over photographers, by demanding more art in the picture, and more style in the composition. We make no extravagant claims for photography—we know well how necessarily limited is its range compared to painting—but we know, also, within its range how perfect are its delineations when guided by the trained hand and cultivated brain. With regard to the reproach thrown against photography, that it was merely a mechanical operation, the lecturer observed that, if such were the case, then mechanics could work it with success; but it is found that they cannot do so—they fail. Anyone can by practice and attention produce perfect chemical results; but it requires a real love of true art, and a just appreciation of the beautiful, to obtain a picture. No one disputed the scientific value of photography; but when we come to its claims and position as a "fine art," a more debateable subject was opened up. Science has looked upon photography as pre-eminently its own, as depending on a series of delicate chemical experiments; as an illustration of the action of occult chemical and physical forces, and a valuable registrar of some of the hitherto un-noted or imperfectly recorded phenomena of nature. Science is simply knowledge. But it has acquired, by application, a more specific and limited meaning, and is generally understood to mean systematized knowledge—facts verified and arranged, their relations ascertained, their laws deduced, their principles and import understood. Photography had illustrated the general history of science in an especial manner. Its earliest years were distinguished largely by empiricism. All the facts were new, and such as could not have been anticipated by any mode of reasoning *a priori*. The early explorers had no other source of reliance but the results of tentative experiment. When a few facts were established, chemistry was enabled to offer a valuable helping hand, and photography has well repaid the loan by bringing to light chemical laws before only dimly dreamed of.

As time only allowed of a very few scientific researches to be brought forward, the lecturer endeavoured first to show what had been done towards producing photographs in natural colours, by detailing some of the experiments of M. Becquerel, M. Poitevin, and Mr. Wharton Simpson, in all of which one fact was worthy of notice—viz., that violet sub-chloride of silver was recognised as the common starting point. He then referred to the experiments of MM. Ducos du Hauron and Chas. Cros, who, instead of endeavouring to reproduce on one and the same surface all the natural colours indistinctly, sought to analyse and separate them, so as to obtain three impressions corresponding to the three primitive colours—red, yellow, and blue—and these three monochrome results, presenting all the gradations of tint which photography re-produces so accurately, being combined by some system of synthesis, are blended together, and yield all the other colours, inasmuch as the three together contain all the elements of the spectrum.

With respect to the question of want of permanence in photographs, which question, however, has now been solved by science, he stated durability unquestionably was an important merit, but it was to be prized upon grounds entirely distinct from an abstract admiration of art. The more durable a work of art was, the more durable it was as a possession; but considered simply as a work of art, it was neither better nor worse than that which possessed the quality in a minor degree. He then briefly detailed Mr. Woodbury's photo-relief printing process; also that recently perfected by M. Obernetter, as well as the most perfect lately presented to the public, that of Herr Albert (an admirable illustration being handed round for inspection), and closed his remarks on the scientific claims of photography by mentioning the researches of Professor Mach, of Gratz, who by means of photography was enabled to attain the desired end, when making experiments on the effect upon the retina of masses of light distributed over certain spaces, the results of which were valuable to physiological optics, and in the construction of explanatory geometrical figures.

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* *Zeitschrift fur Chemie.*

In dealing with the art portion of his subject, the lecturer thoroughly exposed the fallacy of some of the arguments put forward to show that the production of anything like a work of art is impossible by photography. In the first place, he defined the qualities we should look for in a great artist; then alluded to Mr. Ruskin's definition of art, deduced from this, that painting is a language, with all its technicalities and difficulties, invaluable as a vehicle of thought, but by itself nothing. He who has learned what is commonly considered the whole art of painting, has, as yet, only learned the language by which his thoughts—if he has any—are to be expressed. Then he went on to quote from Dryden, "The most important thing in art is to know what is most beautiful." According to Barry, art is selection, and is most perfect when that selection is the most judicious. After mastering certain tolerably definite and simple rules and principles, art study chiefly consists in constant observation and appreciation of the beauties of nature and art, and in attempts to realize in practice these beauties. The main fallacy into which art critics fall, is in the assumption that, because the photographic camera has no soul, the photographer's work must necessarily lack the impress of a soul. The error is obvious—they mistake the tool for the workman—the art faculty is in the producer, not in the materials or the method of working them. This is the whole position for which we contend. It depends upon the man whether the results of his labour shall be a work of art or not. Few photographers have been subject to more bitter denunciations than was Turner himself, and so critics continue to blunder along at the present day; they are always confounding high art with fine art, and because photography is unsuited to the one, they argue that it is incapable of the other; while, really, no one has ever claimed for it the capability of competing with high or ideal art. But is there no fine art but ideal art? If so, what are the works of Landseer, Frith, Creswick, and a host of others whose especial charm is *truth* in the delineation of nature. In glancing at photography as applied to portraiture, one of the common forms of depreciation was that of complaining that photography had no power to idealize. The notion that the artist should invest his sitters with a grace or a nobleness not their own seems never to have been doubted. He then explained the difference between hardness and sharpness in a picture; then drew attention to the passage from Wordsworth, which has been so often quoted:—

> "Ah! then, if mine had been the painter's hand,
> To express what then I saw; and add the gleam,
> The light that never was on sea or land,
> The consecration and the poet's dream—"

and said that if this "light that never was on sea or land" is anything more than poetical licence, it is the expression of a dissatisfaction with the delineations of nature as she is, and is, as Ruskin calls it, a craving for the "audacious liberty of that faculty of degrading God's works which man calls his imagination," and is an illustration of the position we find continually enforced, that painting receives its perfection from an ideal beauty superior to what is to be found in individual nature. This is maintaining an idea that the artist is greater than the Divine Maker of nature.

In the course of some critical remarks several quotations were made from an admirable work, entitled "Pictorial Effect in Photography," by Mr. H. P. Robinson, a gentleman who has not only long occupied a foremost position in the ranks of art photography, but had, previous to his introduction to photography, spent some years in the study and practice of art as a painter, his works having been exhibited at the Royal Academy and other exhibitions of paintings. To him the lecturer was indebted for having kindly selected and lent the admirable collection of photographs which formed the illustrations to the lecture.

In conclusion, he advised the earnest art photographer not to be discouraged by failure or by abuse, but to strive to attain to greatness of style, which consisted, first, in the choice of a noble subject; next in the love of beauty (but beauty always in subordination to truth); and finally, not to forget the words of an able writer in the *Quarterly Review*:—"An art has not had a fair trial until it has had an opportunity of appealing from the neglect of one generation to the verdict of the next. It must educate not only those who are to practise it, but also those who are to enjoy it. When the power which photography confers of dealing with light and shade has received the recognition which greater familiarity will procure for it, no one will deny its title to be ranked as a fine art."

After the lecture a discussion followed, and since then the art claims of photography raised by Mr. Coffin have been called in question in the correspondence of a local paper, a long letter by Mr. W. Eastlake restating the old, fallacious, and oft-refuted arguments on the subject. This letter was ably and conclusively answered by Mr. Coffin.

GREEN GLASS IN THE DARK ROOM.

BY M. CAREY LEA.*

Some little time since I saw a suggestion (I regret that I cannot now recall where) that green glass might take the place of yellow in the dark room. I did not, however, pay any attention to it until another circumstance seemed to indicate that such a substitution might be useful. In the colour processes of Ducos du Hauron and Cros, camera exposures are made in succession through glass of different colours (purple, yellow, and green); and it was mentioned in the description that it was found that the time of exposure was longer when the green glass was interposed than with the yellow. This seemed to indicate that the non-actinic influence of green glass might be very useful in photographic operations. I therefore procured some green glass and gave it a trial. The result was that I at once and entirely discarded the yellow, and from that day (some months back) to this I have used nothing else.

I was not disposed to publish the matter (and advise others to try it) until my experience should fully warrant me in doing so. But I have prepared and developed hundreds of plates; and, as I do not ever expect to work in yellow light again, I feel that I shall do a service in recommending this mode of working. The difference in fatigue to the eyes is most important. Every one knows how trying to the eye is a reddish-yellow light, and how soft a green one; and, if the latter be a sufficient protection to the plate, as it proves itself, there should be no hesitation in making the change.

My trials have been made with artificial light—gas-light only, as I generally prefer to use it, even when working in the daytime; but I always allow myself plenty of light. I think, indeed, that the illumination produced by any given flame is, perhaps, reduced more by the green glass than by the yellow. The difference, however, is not great, and it is easy to make the flame a little stronger. I use an Argand gas-burner turned fully on—give myself light enough to read writing, labels, &c., with entire facility—and find that I can do so safely.

Some care needs to be taken in the selection of the glass, and neither the lightest nor the deepest commercial green glass is suitable, but an intermediate shade. It should not be a bluish green, but a full, clear green. I attempted at one time to obtain green chimneys for gas burners, but those that I could meet were both too blue a green and too transparent.

This fact—that green glass affords adequate protection to sensitive films—has an additional interest to me from the fact that it confirms the position that I have always maintained, that the alleged sensibility of bromide of silver to the green rays had no practical value. I have always held that the advantages found in the use of a bromide lay in its greater sensitiveness to weak radiations of light. That, therefore, it was useful in rendering foliage, not from any useful amount of sensitiveness to the green colour, but by reason of its being more easily acted upon by the weak light sent back from the surfaces of the leaves; that is, weak, reflected white light.

Now my experience in the dark room fully confirms this view. The plates that I have worked with have been almost exclusively chloro-bromide and collodio-bromide dry plates; in the latter the film consisted entirely—and, in the former, almost entirely—of bromide of silver. If, therefore, this substance had any sensitiveness to green light worth considering practically, my plates must have fogged; whereas I have had immunity from any such trouble. It would, perhaps, be difficult to imagine any stronger proof than that which is here afforded. My plates have often lain soaking in clear water in an open porcelain pan, within three feet of a bright Argand burner turned fully on, with no protection except the green glass, and have remained so for ten or fifteen minutes together without suffering in the least—a tolerably severe test. Of course, if too transparent a piece of glass be used, the security cannot be expected to be complete; but it is easy to find glass that will cut off the active rays, and yet let through an abundant illumination.

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* *Philadelphia Photographer*

As to the arrangement, of course, any means that are good for supporting a yellow glass pane will answer for the green. The following is a convenient plan for either:—

Let a carpenter take a piece of wood about twelve inches by six, and, at the narrow ends, fasten on two uprights sixteen inches long. A thin strip is to be nailed on the front edge of each of the uprights; this keeps the glass which slides down immediately behind these strips from falling forwards. A screw put in through each upright behind the glass keeps it from falling back. The upright not extending quite as far forward as the bottom enables the glass to rest on the latter.

The uprights may be rendered secure by a cross-piece at the top or across the back; but in the plan which I first used the cross-piece was much in the way of the chimney. I therefore substituted the following arrangement:—

Two square pieces of wood with bevelled edges were glued and screwed in at the lower corners, one edge of each resting on the bottom, and one on the upright. This gives considerable firmness, which is increased by nailing two other triangles against the outside lower corners. The uprights are thus kept firmly in their places, without any encumbrance to the upper part of the frame; and as the glass moves easily between the outside strips and the screws inside, it is not liable to be broken by any warping of the wood, and is easily removed when it needs cleaning.

The size above described carries a pane twelve inches wide and sixteen high, which gives a satisfactory amount of light. The two uprights shade the spaces to the right and left of the light, and the strips which confine the plate in front prevent any stray beams from escaping between the glass and the supporting uprights.

Before closing I desire again to call attention to the importance of saving the eyes by working in an agreeable light. This is especially important in coating the plates. To watch the wave of collodion and manage it easily, one must catch the reflection of the light on its surface; and, to do this, the light must be directly in front and straight before the eyes. Any light in this position tends to fatigue the sight, and doubly so when the light is of a glaring yellowish shade.

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Correspondence.

COMBINATION PRINTING.

Dear Sir,—Will you allow me to offer a suggestion of an improved method of masking for double printing, more especially for small sizes such as cartes or cabinets?

Let the foreground and figure be taken in the ordinary manner against a white background; after printing the first copy, lay it down, printed side up, on a flat drawing-board, and over it lay a piece of collodion tissue, same size as the proof, fixing both at the corners with drawing-pins; then proceed to paint out with opaque colour on the tissue the figure, foreground, and any detached objects, such as birds, branches, foliage of trees, &c., noting the outline carefully. When this has been done the tissue makes a very perfect mask, which no scissors can equal. Of course the background must be printed through the tissue, which has a slight softening effect not undesirable.

The simplest way of applying the mask is to lay it down on the print and guide it into position, which is easily done, owing to the transparency of the tissue. When properly adjusted, fix both with spring clips at one end, to hold them in position while turning over and laying down on background negative. It will be seen that this avoids the risk of spoiling the background negative by pasting on the mask, as in the old way.

If birds are wanted in the picture, they might be sketched out on the white background in charcoal, and brushed out when done with.—I am, yours truly,

Wick, January 27th, 1870. Northern Photo.

HIRING APPARATUS.

Dear Sir,—I think the suggestion of our correspondent "N. T. G." very good, and would benefit a great many amateur and professional photographers; and I think if amateurs hired first-class lenses and apparatus, that, after proving them and producing first-class work, they would very likely purchase them, and especially if they could be allowed to pay for them by instalments (say monthly or quarterly), producing satisfactory references, and paying the hire-money regularly. I hope some of our opticians will think the matter over, and suggest how it can be done with safety to them; and I leave it for some other correspondents to make some suggestions. Yours truly,

Hanley, January 31st, 1870. Thomas Hopkin Hall.

Sir,—I beg to endorse the sentiments of your correspondent "N. T. G." of last Friday, respecting hiring out of apparatus. I have often thought that if some house would introduce the system of letting out lenses and other apparatus, the same as is done here (Manchester) with musical instruments, it would benefit a great many of the poor photographers. They let them by paying a fixed sum per month, or quarterly, and at the end of a term it becomes the property of the hirer, without further payment. I think if we could prevail on some of our first-class makers of lenses, &c., to introduce the same system, whereby both professional and amateur could obtain good articles on easy terms, it would be a means of driving out of the market all the cheap lenses, and, as a consequence, would be able to produce better results from their labours. By inserting this, you would oblige another amateur. H. R.

Openshaw, Manchester, January 31, 1870.

MR. GULLIVER'S CAMERA WITHOUT DARK SLIDE.

Dear Sir,—I reply with pleasure to Mr. W. C. Cox's enquiry concerning the mode of working a camera without dark slide. I use it because it has so many advantages; when on a trip it is lighter, smaller, quite light-tight, sure to be perfect in focus, and, when accustomed to it by a little practice, just as easy to use as the ordinary camera.

Let us proceed to weights and measures. I take an ordinary landscape camera by a first-class London maker, intended for a plate 7 by 4½, the usual double bodied sliding camera; the base-board is 11 by 9, height 7¾, the body, when closed, 6; this weighs, with dark slide, 5 lbs. 2 oz. Now my little camera without dark slide measures 9 by 5½, is 5¾ in height, and weighs 1 lb. 10 oz.; it will take a plate 6½ by 4¼, or a little longer if required; it has a division in the centre that is removable; will take a cabinet-size landscape, a stereo view, or, by turning it on end, will take two card landscapes one over the other; fitted with a pair of Grubb's patent lenses and a Ross' doublet, it is complete. Good lenses must be used—Ross', Dallmeyer's, or Grubb's—as the slightest defect is soon shown in a camera of this description.

Now for the way of working. Arrived at the spot intended for operation, the dark box or tent is put in place, the plate coated and in the bath, the camera is screwed on the stand, the top of which is a triangle. The camera front is level with the front side of the stand; a piece of finely ground glass is put at the back of the camera, resting upon a V-shaped piece of bone at each bottom corner, and kept in place at top by two studs and two brass buttons. The focus is taken, the camera unscrewed off the stand and put inside the tent. By this time the plate is iodized. The wet plate now takes the place of the ground glass, the back of the camera is put in and fixed with buttons, the camera again screwed on the stand (which, by-the-bye, must not be moved from its place). The caps are now taken off the lenses, the plate exposed, the camera returned to the tent, and the plate developed. What can be easier? The camera is, in fact, a wide dark slide without a lifting shutter, and without the uncertainty sometimes caused by using a camera with a dark slide. The brass buttons referred to are the same sort as used on the usual dark slide. Silver wire corners would do as well as bone, but are not so convenient.—Yours truly,

THOMAS GULLIVER.

18, *Union Street, Swansea, February 1st*, 1870.

PS.—The above will also reply to "S. B.," Glasgow; "M. R. M.," London; and "F. S.," with thanks for kindly expressed wishes.

CAUTION.

SIR,—In justice to my brother photographers, I am anxious, through the columns of your Journal, to put them on their guard against employing an operator calling himself T. Hart, who has for a short time been in my employ, and who, during my absence from home, has absconded, taking a pair of Dallmeyer's stereoscopic landscape lenses, with rotating stops, one and a-quarter diameter; a rapid rectilinear lens for eight and a-half by six and a-half pictures by Dallmeyer, rigid setting; and an extra rapid carte-de-visite lens by Squire, numbered either 7601, 7610, or 7613; and also obtaining money under false pretences from my son.

As he will no doubt be seeking a situation, it might be of service to others to know that a warrant has been issued and a reward of three pounds offered for his apprehension, information to be given to the police at Scotland Yard, or any of the police stations.—I am, sir, yours respectfully,

EDGAR COX.

3, *St. Mary Street, Weymouth, February 2nd*, 1870.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE first monthly meeting of this association for the present year was held on Tuesday evening, the 25th ult., at the Free Library, William Brown Street, Mr. O. R. GREEN in the chair.

The minutes of the annual meeting in November last were read and confirmed, after which

Mr. JOHN HENDERSON, the newly-elected President, entered upon the duties of his office, and made the following observations:—

PRESIDENT'S ADDRESS.

During the past year no very startling discoveries have been made in connection with our art-science. Landscape photography, in which we, as amateurs, are more immediately concerned, is indeed in much the same position as we found it twelve months ago. This state of temporary quietude need not surprise us when we consider that the advance of scientific discovery, though apparently gradual and proceeding in an unbroken chain, is nevertheless often fitful and intermittent. Science frequently steps in to supply the long-felt cravings of insatiable man; at other times, and perhaps more frequently, she anticipates his requirements, or even initiates fresh wants on his part.

The progress of art, it must be confessed, is much less uniform. During many periods its influence has been almost ignored. On the other hand, some branches of the arts, and especially of the fine arts, have, at certain periods, attained a perfection to which subsequent generations have in vain aspired

The current literature alone now supplies us with numerous mines of scientific experience, in which we may profitably work. There can be little doubt, however, that, from a variety of causes, many of the discoveries, more or less useful, of past ages have been lost, and await rediscovery. The theme is an inviting one; we must, however, confine our attention to the subject more immediately in hand.

The increase in the production of ready sensitized papers at a moderate price, yielding excellent prints and possessing good keeping qualities, is a subject upon which amateur photographers may well congratulate themselves—freeing them, as it does, from a portion of the drudgery of printing, besides effecting a saving of time and material.

Proceeding now to a review of our position as a local society—situated, as we are, in a spot whose surroundings are singularly destitute of natural beauties or of antiquities, and where art is very inadequately appreciated—we are, let us hope, striving to contribute our quota to the advancement of our favourite art-science.

The collodio-bromide process, which simplifies the production of the negative to a much greater extent than does ready sensitized paper that of the print, emanated from among us; and by us, unaided from without, has been brought to its present state—I had almost said perfected, but the idea implied in the term is an unsafe one. We must never be satisfied with present results if we would wish to attain to greater. If our favourite process has any drawback, it is a slight want of rapidity; and, at the present moment, experiments are being made on the process by scientific men in other places, with a view to securing increased sensitiveness.

It is remarkable how frequently a single dry process becomes almost the speciality of a particular district. This exclusiveness is scarcely desirable, leading us to work too much in one groove, and restricting the spirit of emulation. Doubtless a more free interchange of sentiment between the members of the various societies would lead to an expansion of our photographic ideas.

The present year will witness the visit of that congress of science, the British Association, amongst us. As a working society we should therefore be on our mettle to produce such results as will not then discredit us.

It would, perhaps, be too much to expect the use of wet plates among our members to become more general in the field. The production of instantaneous sea and cloud pieces is, however, quite within the reach of most of us, and our silver bath may likewise stand us in good need in the production of transparencies and enamels. The manipulation of the latter, indeed, has now become so much simplified that efforts in this direction should engage some of our attention.

The obtaining of prints on carbon tissue is likewise now rendered more feasible than formerly, and ought not to be lost sight of. I do not wish to be understood as in any way depreciating ordinary silver prints on albuminized paper, the stability of which, under proper management, has, I think, been unduly called in question.

Before proceeding further, we may notice the increased favour in which lenses of narrow angle are now held. However valuable a wide-angle lens may be, under conditions of infrequent occurrence, there can be no doubt that in some hands their use has led to abuse.

With regard to prizes, I would desire you to consider whether they have been found to be a stimulus to effort; and, if this be the case, whether there is any danger, as some suppose, of the free "diffusion of useful knowledge" being thereby affected. If we are to retain them as a stimulus, should not some restriction be placed on those who have previously been successful competitors? We should lastly consider whether our prizes ought not to assume some definite form—say of books, or works of art. It would be well if the sense of our members were taken on these questions before the active work of 1870 be entered upon.

The interest of our meetings would be promoted by the reading of one *practical* paper, however short, with demonstrations, if possible, at each meeting, and an occasional exhibition of lantern transparencies, to the production of which I again draw attention,

Though the idea may be deemed a retrograde one, I am yet of opinion that those of us who work large plates might with advantage devote some attention to the Talbotype and waxed-paper processes, with a view to their improvement. If it be conceded that a direct large picture is preferable to the best enlargement, and that the weight and risk of glass in travelling—to say nothing of the subsequent risk in printing—is a serious drawback to the use of such plates, it is, I submit, worth trying whether we cannot bring our present experiences to bear upon the improvement or modification of processes akin to those I have named.

I must conclude with a reference to our excursions, respecting which past experience has doubtless taught us that they must be less frequent, and possibly more practicable. I see no reason why a programme of places to be visited should not be laid down at the commencement of the session, and even approximate dates fixed. The appointment of a sub-committee for this purpose would facilitate the matter and save much time.

The able and genial manner in which the late president, Mr. O. R. Green, had fulfilled the duties of the position were briefly referred to by the Rev. G. J. Bauner and Mr. J. A. Forrest.

In the absence of Mr. Lewis Hughes,

Mr. W. H. **Wilson** gave a description of a solar camera employed by the first-named gentleman in the production of enlargements. In front of a window having a southern aspect he places a table having a hinged top, so that it can be adjusted to any angle of inclination. Upon this the camera is placed, and the lens pointed to the sun. The camera simply turning on a pivot, the instrument can be kept on the same plane, and, being gently moved by the hand, will follow the course of the sun for the day on which the adjustment is made. In practice this method answers perfectly. The focussing is done upon white cardboard, the observer's head being covered by a loose bag projecting from the bellows part of the instrument. Mr. Hughes had also sent for exhibition an ingeniously contrived frame for printing stereo. transparencies.

Mr. Clifton Parkinson was elected a member of the Association.

A letter from the Manchester Photographic Society, announcing an exhibition to be held in February, having been read, several members promised to forward contributions.

On the motion of Mr. Green, seconded by the Rev. G. J. Banner, it was resolved that a sub-committee be appointed, to be called the Excursion Committee, for the purpose of arranging the year's excursions, and that the said committee consist of six persons. Messrs. Green, Wilson, Hughes, Roberts, Murray, and Guyton were appointed.

Mr. W. H. **Wilson** next made some observations on the chloro-bromide process brought forward by Mr. M. Carey Lea as a novelty, and recently referred to in the photographic journals. Mr. Wilson, without wishing to detract from the merit of Mr. Lea's discovery, agreed with Mr. Dawson's view of the matter, for, having himself used chloride eighteen mouths ago, he had found, so far from its preventing fogging, he never had a fogged picture until he used it.

The meeting was shortly after adjourned.

Oldham Photographic Society.

The usual monthly meeting of the above Society was held on Thursday evening, the 27th inst., at the Mutual Improvement Society's Rooms, Henshaw Street, Mr. J. **Hall** in the chair.

Messrs. Clegg, Kershaw, Hulmes, and Tollow were elected members.

The **Secretary** then went through some experiments with the magnesium light, and, by its use, succeeded in producing a negative, which was passed round the room for examination.

Mr. T. **Hall** exhibited a kaleidoscope, constructed so that transparencies and ordinary photographs can be introduced at will.

It was resolved that an out-door meeting be held at Bowdon on Wednesday, the 22nd of June, and that a prize be awarded for the best picture taken on that date.

The meeting was shortly afterwards adjourned.

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Talk in the Studio.

Obituary.—We announce with regret the sudden death of Mr. George Price, a gentleman whose name is familiar to readers of photographic journals. A teacher of music by profession, Mr. Price was an enthusiastic photographic experimentalist, printing operations having chiefly engaged his attention. He contributed to our pages some valuable articles in connection with the various utensils used in silver printing, giving especial attention to the chemistry of albumen and its compound with silver.

Lecture on Photography.—On Wednesday evening, the 26th ult., Mr. Blanchard delivered an interesting lecture on photography, at the Notting Hill and Bayswater Proprietary School. In the course of the lecture Mr. England, who assisted Mr. Blanchard by demonstrating, took a negative of a white bust by means of the magnesium light, and this was afterwards enlarged to full size, and a print on paper obtained by the magnesium light and development, Mr. Walter Paul, from Mr. Solomon's, manipulating very successfully. The lecture was concluded by the exhibition of a number of Mr. England's stereoscopic views by means of the magic lantern. Dr. Carpenter, in proposing a vote of thanks to the lecturer and the gentlemen who had assisted him, expressed the great gratification of all present at the complete success of the lecture and demonstrations.

Indecent Photographs.—Another large seizure of indecent photographs and prints was recently made, and William Saunders, 49, Wych Street, George Jackson, Wych Street, H. Paul *alias* Tozer, Holywell Street, Charles Perry, and Samuel Tyler, Holywell Street, printsellers, were charged, at Bow Street, on Saturday afternoon, before Sir Thomas Henry (who sat specially to hear the cases), with having in their possession for sale large quantities of indecent photographs, &c. Mr. Besley, instructed by Mr. Collette (Pritchard and Collette), prosecuted on behalf of the Society for the Suppression of Vice; Saunders was defended by Mr. Sampson for Mr. Johnson, High Street, Marylebone; and the other four defendants were represented by Mr. Poynter. Witnesses deposed that they were instructed by Inspector Brannan to purchase prints at the shops of the defendants. These prints were subsequently handed over to Mr. Superintendent Thompson, who had charge of the case, and who gave orders for the seizure of the photographs, which was made on Friday evening. Mr. Besley asked for a remand, with which request Sir Thomas Henry complied. Bail was applied for in each instance, and Sir Thomas Henry consented to take substantial bail with twenty-four hours' notice.

Illegal Photographic Lotteries.—At the Criminal Court, on Wednesday, Alexander Walker and Thomas Stephen Morris were fined £100 each, and ordered to be imprisoned until the fine was paid, for opening illegal lotteries. Mr. Poland, in behalf of the Treasury, stated that the police discovered in October last that some persons were engaged in a new form of lottery, and a letter was addressed from the Treasury to Mr. A. Long, of 10, Douglas Street, Deptford, who seemed to be a myth, except that Walker lived in that house, warning him that the scheme was illegal; and in consequence of this an advertisement appeared in the sporting papers announcing the fact, and requesting agents to return the money to subscribers. But soon afterwards a new scheme was advertised, called "The Alliance Photographic Club." The advertisement with respect to this stated that Mr. J. Hart, having a large number of photographs on hand, proposed to sell them at 1s. each, and promised to divide £200 among his purchasers, presuming 5,000 photographs to be sold, out of the profits. The affidavits in the case showed that the prisoners were in reality J. Hart, and that purchasers of the photographs, faded copies of public characters, among whom there was a colonial bishop, Lord Ebury, and Mr. Martin Tupper, were presented with a receipt for their shilling bearing a number, and a personal applicant was told by the wife of one of the prisoners, who was a milkman, that the draw would be held on the morrow, and that "it would be quiet," so that he could not attend. A few days afterwards he called again, and the same woman, in answer to his questions, told him that the draw had been made, and gave him a list of the successful numbers. As 5,000 shilling subscriptions would only produce £250, and £200 was given away in prizes, it was evident the photographs were considered as worthless. It was necessary, in the interests of the public, that these practices should be stopped; the Treasury was determined that no efforts should be spared to suppress them; and as the prisoners had treated the leniency of the Court in May last and the warning of October with contempt, substantial punishment must be prayed. The necessity for punishment in this case was the greater inasmuch as advertisements were were now appearing with reference to other similar practices. Mr. Pritchard having addressed the Bench in the prisoner's behalf, in Mr. Straight's absence, the Recorder observed that it became the duty of the Court to take such steps as would make the state of the law on the subject thoroughly well known; but the Court was not disposed to pass a sentence of imprisonment in this the first case, and would be content with ordering the prisoners each to pay a fine of £100, and to be imprisoned until the fine was paid. It appeared from the affidavits that one of the prisoners had boasted to a constable whom he knew that he was making lots of money, and twitted the constable with being unable to find out how they managed it.

To Correspondents.

B. T.—We have seen some further examples of Mr. Hemery's combined negatives, and we understand that he will shortly bring the matter before the public. The results we have seen are very good. The unfavourable weather has caused some delay.

One who Tries.—The exact proportion of glacial acetic acid to be added to developer to prevent fog without retarding unduly cannot be arbitrarily stated, as it depends upon many circumstances, such as the condition of the nitrate bath, collodion, &c. If the nitrate bath be in good condition, the collodion ripe, and the exposure full, a strong iron developer may be used without acid at all. In proportion as the materials are in imperfect condition, the tendency to fog is generally increased, and the proportion of acid necessary becomes larger. A bath which has been used some time, and which contains organic matter, generally requires a full proportion of acid in the developer; newly mixed collodion requires the same thing; if the plate has been under-exposed, so that development requires pushing to bring out detail, a good supply of acid is necessary to prevent fogging. For a thirty-grain iron solution try fifteen minims of glacial acetic acid. 2. The usual card lens of a good maker, with an equivalent focus of about six inches, may be used for cards in a room fourteen feet long. Such lenses are generally two inches in diameter. Extra quick acting lenses of much greater diameter and the same focus may be obtained.

W. S.—Your former letter must have miscarried, as we never wilfully neglect to answer our correspondents. Sometimes letters reaching our hand late in the week do not receive attention until the following week; but when three weeks elapse without an answer appearing, our correspondents may always conclude that from some accident their letters have not reached us. The process of precipitating an old bath by means of bicarbonate of soda, and then re-dissolving the precipitate in nitric acid, is very efficient if carefully conducted according to instructions. 2. If an acetate toning bath be made with an acid sample of chloride of gold, the solution will not be neutral, but the free hydrochloric acid will decompose part of the acetate of soda, forming chloride of sodium and free acetic acid, which will not in any degree interfere with the toning operations. If you wish, however, to neutralize such a solution, a little chalk may be added. 3. It is quite impossible to state the time of exposure required by any lens, as the intensity of light is constantly varying; different objects require different exposures, and different conditions of chemicals also involve different exposures. The D lenses require double the exposure of the ordinary portrait lenses of the same maker.

S. S. S.—Wood lined with gutta-percha or with a thick varnish of marine glue will answer well.

K. J. F.—The action of gallic acid in collodion. and its effect on the bath, are questions which must be determined by experience. Mr. Bovey sent us an excellent example of the rapidity gained by its addition to collodion. Mr. Hardwich, some years ago, reported that the first effect of adding gallic acid to collodion was increased sensitiveness, but that the collodion rapidly grew very insensitive, and the bath in which it was used fogged. But the subject is well worthy of renewed investigation.

W. H. J.—The slight differences in the mode of working the same process adopted by different skilled men do not necessarily indicate any absolutely better or worse plan, as different methods, each equally good, often suit the special mode of working of individuals. We publish all the details of formula and manipulation of different authorities, but, as a rule, each worker must select the precise method which best suits him. Mr. Gordon, in his first article on the gum-gallic process, recommended alkaline development, and gave minute details of the mode he recommended. You will find the article in our Year-Book for 1868. He abandoned that method in favour of the iron development he described, because he found the latter gave better results with less trouble. Mr. England adopted the alkaline method because he found it permitted the plates to be kept longer before development without disadvantage. So far as we know, he followed the method described by Mr. Gordon; but Mr. England is in the habit of dealing with each plate according to its special requirements rather than adopting any invariable rule. The question whether ammonia or bromide solution should come into contact with the plate first much depends upon the condition of the film, whether it already contains some free bromide or not.

Enquirer.—Try Hopkin and Williams.

W. M. Crouch.—Undoubtedly there should be a space opaque over head. We should recommend you to make four feet of the roof at the background end opaque. Then have three blinds, each a yard wide, running the whole length of the sky-light, one or more of which will generally be required down to get anything like modelling in the faces of your portraits. We should not recommend removing the stippling from the side. 2. Second-hand accessories are not usually accessible. 3. Add to each ounce of collodion about a grain more of good pyroxyline.

T. L. Howe.—We regret that we cannot tell you the price. Write to a dealer in philosophical instruments. Try Mr. Cox, of Ludgate Hill.

Anxious.—The questions you ask are scarcely of the character upon which we can legitimately offer advice, as they depend so much upon personal considerations. We may say, however, that the plan of purchasing the plant conjointly seems desirable. It is certainly not desirable to bind yourself not to commence business in the same city in case of separation. The ladies' dressing room will be in a better position near the waiting room, than opening from the studio. The term of duration to be mentioned in the partnership deed is quite unimportant, as there is generally an understanding or provision for renewal if things go satisfactorily, and a provision for termination at any time if misunderstandings arise. Fifteen years may be a good period to mention.

Joseph Bottomley.—The practice amongst photographers is to retain the negative as their own property, unless an express bargain is made to the contrary. The terms of payment are universally for one or more *prints*, and not for the negative from which the prints are produced. A customer has not, according to common usage, any more claim to the negative from which his prints are produced than he has to the last upon which his boots are made. The charge you propose to make for the negatives is unreasonably low, and your customer is utterly unjustified in declining to pay his account unless he receives the negatives without charge. We may add, it is not an uncommon custom on the part of the Queen to require the negatives of portraits of the royal family by different photographers, but she invariably pays extra for them. You did not state the purpose of the twelve stamps in your letter.

Young Photographer.—With a studio of limited size, in a wrong position, it must be a constant struggle to secure good light or convenient working, and the effort must be changing with every hour in the day and every season in the year. It is impossible to devise a permanent remedy. Try stippling that portion of the roof through which the sunlight enters most with the white varnish described in our Year-Book. 2. It is impossible to speak of average exposures with any given lens, as the light and subjects vary so much. On a fine day at this season, perhaps from twenty to thirty seconds. 3. Probably the Liverpool plates will best answer your purpose. There is no difficulty in developing them if you carefully follow instructions. 4. We cannot possibly state the probable exposure required by the interior of a church "moderately lighted." The conditions are too indefinite for even a vague guess. Look at the brilliancy of the image on the ground glass, and then try a plate. Try a quarter of an hour. From that you will be able to judge whether it requires half an hour, an hour, or more. 5. The tone is not a bad one; but we were able to get black tones on the same paper. As a rule, we prefer warm tones for portraits.

E. H.—If you send a copy of the design and eighteen stamps to our Publisher, he will undertake the registration for you.

C. B. Riversdale.—You will find that all lenses must follow the law of enlargement as laid down in the tables. The probable source of error is measuring by the back focus instead of the equivalent focus. 2. In vignetting enlargements the best position for the mask must be determined by experiment. 3. The transparencies to which you refer are on albumen plates, and the rich chestnut black is the natural colour without toning. 4. It is somewhat amusing to observe what palpable errors of drawing, perspective, and chiaroscuro are perpetually tolerated in paintings, whilst the supposition of possible error being present in a photograph makes the critics rail against the art in most unmeasured terms. We shall have pleasure in seeing the examples of your work. Almanacs sent.

Gowrie.—English sheet glass will do very well for glazing a studio. 2. We are uncertain of the exact difference in price. 3. We should fix the rollers for the skylight blinds at the ridge, as the lower portion of the skylight may often require to be uncovered, whilst the top portion must be down to exclude a vertical sun. 4. The curtains for the side-light will be most convenient running on rods. White calico is as good as anything.

W. May.—Thanks. You will see that we have referred to the matter. It is a pity that more publicity was not given to it.

T. Gulliver.—Thanks. The style will do well, but the introduction should be a little longer. It breaks off too soon.

Thos. Ayers.—Thanks. We will, when opportunity serves, give the matter further attention.

F. Maynard.—Thanks. So far as we can judge, the idea seems good; but unfortunately that sent to us arrived in a score of fragments.

J. Pender.—You will find more than one article in recent numbers of the News on cleaning old plates. Nitric acid is always a useful agent for this purpose. An ounce of bichromate of potash in a pint of sulphuric acid is excellent for the purpose.

Novus.—You do not state the size of the plate which forms the base of the cone of rays. It seems very probable that the aperture of the Kinnear camera will be too small, but you can easily ascertain by tracing the form of the cone of rays. 2. No; filter after sunning; the precipitate is carbonate of silver, part of which will be reduced by light.

Echoes of the Month and several Articles in type are compelled to stand over until our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 597.—*February* 11, 1870.

CONTENTS.

PAGE
Old Negative Baths for Printing 61
Atmospheric Effect in Landscapes 62
Echoes of the Month. By An Old Photographer 62
Improved Photograph Washing Tank. By J. Carbutt 64
Questions and Suggestions. By A. de Constant 64
Combination Negatives. By H. Neale 65
Winter Photography, or Printing by Development. By Prof. J. Towler, M.D. 66
Description of a New Knapsack Tent. By William Harvey Barton 67

PAGE
Prints and their Production. By S. T. Davenport 68
Correspondence.—Permanent Sensitive Albuminized Paper—Hiring Apparatus—Retouching Negatives—Combined Negatives 68
Proceedings of Societies.—Marseilles Photographic Society—French Photographic Society—Bristol Photographic Society—Photographic Society of London 69
Talk in the Studio 71
To Correspondents 72
Photographs Registered 72

OLD NEGATIVE BATHS FOR PRINTING.

The utilization of old negative baths is a matter of vital importance to a large class of photographers. Notwithstanding the various modes of rectifying the bath which are known to photographers, and are frequently found efficient, there are still frequent occasions when a bath is found intractable, and every form of remedial treatment fails to restore the condition in which it will yield good negatives. We need not now discuss the possible causes for such conditions; it is enough that the fact is a familiar one. Many photographers make short work of such baths by at once throwing them amongst the chloride residues, to be recovered at leisure. Those photographers who have systematic facilities for recovering the precious metals from their waste find that the loss incurred by this mode of dealing is less than that involved in experimental efforts to get good negatives from a bad bath. We have heard of a shorter method still of dealing with a bath out of condition. We heard a youthful amateur once ask a dealer, himself a clever photographer, what he would recommend to cure a bath which gave myriads of pinholes. "Just throw it down the sink!" was the response. We can scarcely recommend such a remedy, notwithstanding its extreme simplicity. One of the most useful methods of dealing with the intractable negative bath consists in converting it into a printing bath, and this plan involves little trouble and no loss.

The modes of treating a negative bath to fit it for printing purposes are tolerably well known to old photographers; but from repeated enquiries which reach us we conclude that many young photographers are not perfectly familiar with the subject, and we have occasionally found recently that even experienced photographers are doubtful as to the best mode of dealing with the solution. A brief restatement of the case may, therefore, be of interest to many of our readers.

Two points require attention in preparing a printing solution from an old negative bath: the iodide of silver present must be got rid of, and the solution must be made of the proper strength. The first point, although the least obvious, is of vital importance. The presence of a very small amount of iodide of silver in the printing bath is fatal to the best results: it materially prevents the bronzing of the shadows in the pressure frame, which, within proper bounds, is a necessary condition of rich printing; and it seriously retards the toning of the print in the gold bath, sometimes preventing it altogether. The simplest method of precipitating the iodide of silver consists in diluting, warming, and filtering the solution. The weaker the nitrate solution, and the higher its temperature, the smaller the proportion of iodide of silver it will hold in solution; and, therefore, the more it is diluted, and the greater the heat of the solution, the more complete will be the precipitation of the iodide of silver present. The following method may be followed with advantage: dilute a pint, say, of old negative bath to a quart, proceeding on this wise: take a pint of distilled water, and raise it to boiling heat, then add the silver solution slowly to the hot distilled water. By following this plan a small quantity of silver solution becomes mixed with a larger quantity of hot water, the iodide of silver in solution is at once thrown down, and, being filtered immediately the mixture is completed, before the iodide can be redissolved, it is much more effectually eliminated than if the other course of adding the water to the silver solution were adopted. After filtration, the solution may be strengthened, either by the addition of silver, or by boiling. The latter course has certain advantages, and certain disadvantages. The chief advantage consists in the fact that organic impurities in combination with the silver are generally precipitated by the heat; the chief disadvantage is that the accumulated ether and alcohol, which are useful in the printing bath, are, to a large extent, removed by boiling. In order to ascertain accurately the strength of the solution, with a view to strengthening, the safest course is to test by the volumetric method, either using Mr. Hart's ingenious apparatus, or the plan suggested by Mr. Wilson described in our last volume. The argentomer registrations are comparatively useless in reference to an old bath. Where it is inconvenient to the photographer to make a volumetric examination of the strength, it is generally safe to assume that the defective bath is of a strength not much exceeding twenty grains per ounce, as an old negative bath will not often exceed that strength.

Some photographers of trustworthy experience have found that even the minute trace of iodide present in the old negative bath after dilution, precipitation, and filtering, is sufficient to interfere very materially with the toning of the prints. In such cases we can recommend the method first recommended by Mr. F. G. Eliot in the Journal of the Society many years ago, and afterwards endorsed by Mr. Hardwich. An esteemed correspondent, who, being the earliest professional photographic portraitist now living, writes under the signature of "The Oldest Hand," in a recent letter says:—

"Dear Sir,—As some correspondence has been going on lately in the journals relative to weak sensitizing baths, I enclose some examples.

"My bath was originally made of thirty grains of silver, ten grains nitrate of soda, and ten grains of loaf sugar to the ounce of water; and before it was made into a sensitizing bath was a collection of old dipping baths, rendered suitable for paper by the process in page 545, third edition, of Hardwich. I think if people were to try it and understand it, they would find a considerable saving of their silver."

The examples forwarded were of excellent quality and fine warm purple tone. From various other correspondents, and from our own experience, we have confirmation of the value of this method. We cannot do better, in repeating Mr. Eliot's method, than do it in the words of Mr. Hardwich's Manual, which stand as follows:—

"Removal of Iodide of Silver from Old Nitrate Baths.

"This operation is required in using up old baths for photographic printing, since the presence of iodide of silver may interfere with the rapidity of the colouring action which takes place on applying gold solutions to the picture.

"Begin by evaporating down the bath to a third or less of its original bulk, which may conveniently be done in a porcelain capsule; then make a solution of citric acid, sixteen grains in an ounce of water, and drop it into the concentrated liquid in the proportion of a fluid drachm for each eight ounces of the original nitrate bath. This addition may or may not cause a white precipitate. but the subsequent steps are the same in either case. Next immerse a strip of blue litmus paper. which will immediately be reddened; then add liquor ammoniæ, drop by drop, until, after vigorous stirring, the blue colour of the reddened paper appears permanently restored. Now throw the whole on a paper filter, and, when the liquid has run through, pour water gradually upon the white deposit to displace the solution of nitrate of silver mechanically retained. Repeat this process two or three times, until the filtered liquid measures one-half of the original bulk of the bath. Lastly, drop in an excess of pure nitric acid, sufficient to redden the test-paper decidedly.

"No exact directions can be given as the quantities of ammonia and nitric acid; but with the strongest liquor ammoniæ obtainable, about two drops will be required for each drachm of the citric acid solution. The number of drops of nitric acid must be varied according to the amount of the excess of ammonia.

"The rationale of the process is as follows:—The citric acid, either with or without the aid of ammonia, precipitates white citrate of silver in the bath, and this insoluble substance carries down the iodide of silver with it in virtue of a chemical affinity. Excess of citric acid must not be permitted to remain in the bath, since it would cause redness in the prints. Excess of ammonia, on the other hand, favours discolouration of the bath by use, and lessens the keeping qualities of the paper in hot weather, so that a trace of nitric acid is required to neutralize the alkali."

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ATMOSPHERIC EFFECT IN LANDSCAPES.

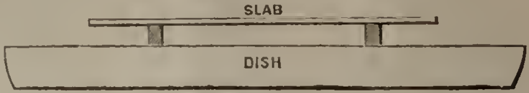
The following suggestion for aiding the production of atmospheric effect in landscapes by a slight gradation and modification of the monochrome in toning, we have received from one of the most accomplished of the many able amateur photographers in this country. It will be noted that although a cool grey distance and a warm foreground suggest two distinct colours, yet tint simply consists of different proportions of the same metallic pigment, and the gradation should be so delicate that no sense of incongruity need be produced. Our correspondent says:—

"I have occasionally produced a pleasing and not unnatural effect in a landscape by allowing a toning solution to remain longer upon the distance than upon the rest of the picture. No doubt this has often been practised by better photographers than myself. It cannot well be done by the usual process of the toning bath, but by the following simple method the manipulation is very easy, and I venture to recommend the adoption of it to any of your readers who may think the effect produced desirable.

"To give Aerial Effect to Distance in a Landscape Photograph.

"Prepare a small quantity of toning solution, six or eight times the strength of the usual toning bath; this can be diluted or strengthened should you find it necessary.

"When you have taken your picture from the printing-frame, and cut off the black edges, and washed it sufficiently, place it upon a slab of plate glass of larger dimensions than the picture, so arranged as to be on a level above the developing tray, or over a large porcelain dish, thus:—



Take off the superfluous water by pressing blotting-paper upon the print; then, with a clean soft camel-hair brush an inch or an inch and half broad, spread some of the toning solution rapidly and evenly over the surface of the paper moving the brush about gently until the foreground of the picture has assumed the tint you require, then swill it well with water to wash off the toning solution. Drain the slab by tilting it up, without moving the paper, and again apply blotting-paper to the print, so as to take up the water on the surface; and, with a smaller brush, if necessary, cover the distance and sky again with the toning solution, keeping it moving with the brush until a sufficiently blue tint is produced. Wash the print and remove it to the fixing bath.

"This method of applying the toning solution, besides enabling the operator to vary the tints upon the picture, has other advantages over the toning *bath*. The solution is always applied *fresh*. You can more easily judge *when* the tint required has been produced, and arrest the action of the gold solution at the proper moment. It is decidedly more economical. You need not waste your gold, but prepare just as much as you will require, and no more. I find three fluid ounces sufficient to tone a dozen pictures twelve by ten inches. The blotting-paper may be dried and used over and over again.

"The only possible objection to the plan which I am aware of is, that if you have a large batch of prints to be toned, it requires somewhat more time and attention than the ordinary toning bath system. G."

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ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Medals for Discovery and Invention—Hire of Apparatus—Gallic Acid in Collodion—Origin of Photo-Collography—Photo-Mechanical Printing Processes—Photographic Lectures—Windows in Studios and the Source of Light—Photography in Court—The Societies.

A very curious phase of speculation is suggested by a letter signed "E.," headed "Incentives to Progress," which appeared in your pages a fortnight ago. "E." assumes, at the outset, that photography is at a stand-still, and that a great change is necessary to secure its advancement; he thinks that the photographic brain throughout the world is stagnant; and he thinks that "all this happens because there is no encouragement," because there is no crown awaiting the worker and the thinker. As a remedy, he proposes an organization to reward the originator of the best discovery with money and medals.

Now, I cannot help thinking that whilst the aim of the writer is laudable, there is some strange misconception underlying his project I will not enter into discussion as to whether the state of stagnation which he deplores really does exist, and whether the journals contain "dross," whilst "pearls" remain locked up in the breasts of some photographers. Some people have been foolish enough to believe that the progress of photography has been unparalleled in the history of science and art, and that its progress has been largely due to the journals, and to the freedom with which every discovery, invention, hint, and suggestion had been thrown into the common treasury; but as "E." manifestly thinks that all that has been done is practically nothing to what might be, we will let that pass. The curious speculation to which I referred as suggested, is expressed in the enquiry, was any great discovery ever made because a medal and a purse of fifty guineas had been offered to the discoverer? I think not. I will not deny that the knowledge that reward awaited him might probably be a stimulus to the discoverer or inventor to prosecute a new idea and work it out into practical shape, but I feel satisfied that such hope would not originate the novelty. Discoveries and inventions, I take it, spring from two sources: in one case, they are the irrepressible outcome of original minds, and will continue to be made and to be published, whether rewards are offered or not. In the second case, they are often the result of happy accident, and, of course, are not brought into being by the hope of reward.

But whilst I deny that discovery or invention can be stimulated in any material degree by the promise of reward, there is something very important which can be so stimulated: I mean the resolve to follow up discovery, and to work out to practical issues invention. The hope of reward is of vital importance in effecting this; but the simplest, most legitimate, and most efficient form that reward could take would be best secured by a cheap and efficient patent law, securing to the originator of a good thing a property in his production.

Nevertheless, if a better society than that in existence can be secured, or if that in existence can be raised in tone, I shall be glad to see the proposition of "E." carried out. As one of your correspondents recently mentioned, *the* Photographic Society some time ago resolved to institute a President's medal, to be awarded to those who should read especially good papers and make valuable novelties known through the Society, and the first medal was awarded. I believe, however, that for want of funds that medal was never struck. Will "E." aid in forming a medal fund? And will he, when the medal is ready, engage that some of the retained pearls shall be forthcoming for the good of the art?

A good and practical suggestion was recently made in your pages relating to the hire of apparatus. The system pursued in the hire of pianos, or the mode adopted in building societies, might easily be applied to the case. I fear that photographers of moderate means are often "cribbed, cabined, and confined" by the limits of their practical facilities for work. A good lens for large pictures is as expensive as a piano, and it is as important to try its fitness for the end in view as it is to test the tone of the piano. Why, then, should not similar arrangements for hire, trial, and purchase exist? To make such a scheme efficient, it should be adopted by some business house prepared to supply all kinds of apparatus, as it could not be so well managed by a manufacturer, who would supply his own goods only; but if the plan were adopted, all the manufacturers would doubtless offer facilities to the house undertaking the matter.

I was glad to see the revival, by Mr. Bovey, of the idea of adding gallic acid to collodion, as I believe that it often happens that an idea which may have been abandoned as worthless at one period of an art's history, may be found, under new circumstances, and examined in new light, most valuable. The Alberttype is a singularly interesting illustration of this. In 1854 Paul Pretsch patented a method of photo-engraving, by which his aim was to obtain printing surfaces in intaglio or relief. Incidentally he states, after describing the mode of preparing, exposing, and treating the sensitive gelatine, that printing ink may be applied to it, and impressions obtained for zincographic or lithographic purposes. It seems evident that, although the inventor found this might be done, he was so intent on his engraving process that he gave this part of the subject no further attention, and it fell to the ground a dead letter. In the following year M. Poitevin made a similar discovery, quite independently, I have no doubt. He, however, seems to have practically utilized his discovery; but he has made definite claim to each process which others have since built upon the original idea. Tessie du Motay's process and Herr Albert's are undoubtedly based upon this idea, with, however, sufficient absolute improvement to give, in each case, the improver a definite title in his process. I see, however, that M. Poitevin has recently been putting forth his claim to M. Albert's process, doubtless ignorant of the fact that the real origin belongs to Paul Pretsch. I hope that Mr. Bovey, or some other skilful practical man, may do for the use of gallic acid in collodion what Herr Albert has done for Pretsch's crude idea, and give us a collodion so rapid that the slightest wink of the sun's eye, even through a veil of fog, shall give us instantaneous pictures.

What can be the reason that we have heard so repeatedly for years of ingenious photo-mechanical printing processes, some described cautiously as possessing promise, and others as really yielding fine results, and yet none of them come into general practical use? Surely the field is wide enough for employing them! But where are they employed, or what is the reason they are not employed? Poor Paul Pretsch, who produced some very fine results, was nearly driven to desperation by want of success. Mr. Dallas, whose photo-electric process, as shown by his "Kenilworth," given to the readers of the News half a dozen years ago, was exceedingly good, and who has produced some other good photo-mechanical processes, has struggled on for years, I am told, without a tithe of the success he merits, and I do not see his work in commerce. Mr. Woodbury's beautiful process has three times come to commercial grief. Mr. Ramage, Mr. Lewis, Bullock Brothers, Mr. Courtenay, Mr. Hancock, Mr. Fruwirth, and some others have introduced processes of real value, none of which have come into general use. Albert's unquestionably fine process seems most tardy in its introduction to this country. How is this? In other countries various photo-mechanical processes are worked with success. The American Photo-lithographic Company, under Mr. Osborne, is a great success. In almost all the countries of Europe some of these processes are regularly worked in commerce. In this country, except in government departments—under Col. James, for instance, at the Ordnance Survey Office; under Mr. Butter, at Woolwich Arsenal; and under Mr. Griggs, at the India Museum—photo-mechanical printing processes are very considerably, if not entirely, neglected.

I see you give an abstract of an excellent lecture delivered at Plymouth by Mr. Coffin. Another excellent lecture was given by Mr. Blanchard to the friends and parents of the youths at the flourishing proprietary school at Notting Hill, at which Dr. J. E. Carpenter, so well known as the author of many of the best songs and lyrics in the language, is the leading spirit. The demonstrations, in which Mr. Blanchard was assisted by Mr. England and Mr. Walter Paul, were unusually excellent.

I have often been amused by the prevalence of the error to which you recently referred, in which the window of a studio is regarded as the source of light, instead of an aperture which admits light from its source. It would surely be as wise to regard the mouth as the source of food, since it is an aperture through which food is admitted to supply the system. "Oh," replies a glib but uninformed observer, "but the window must be the source of light, as I have always noticed that the intensity of the light on the model diminished in intensity in proportion to its distance from the window." Precisely so; but not because the window is the source of light, but because its angular aperture is diminished, and the amount of light in a studio is diminished when the angular aperture through which light is admitted is contracted, just as it is when the angular aperture of a lens is contracted, and in precisely the same ratio. A lens of one inch aperture and eight inches focus will require an exposure of four times as long as a lens of the same aperture four inches focus; so a room lighted with one window in the roof of three feet square will admit four times as much direct light to an object at four feet from the window as it will to an object eight feet from the window. Moving the sitter nearer to the window is equivalent to shortening the focus of a lens, and removing him further from it equivalent to lengthening the focus of a lens.

Photography has figured in various ways in court during the month. A complicated bill transaction came before the Court of Chancery, arising out of a project to purchase the business of Disderi and Co. In the police courts, vendors of indecent photographs have again been charged with pushing their infamous trade. In a county court, an editor of a photographic journal sued the proprietors for arrears of salary, and obtained the amount due. The details possess no interest outside the small circle concerned.

The Societies continue to be active and interesting. Mr. Baden Pritchard's interesting paper on Minor Applications of Photography, and his description of the operations *Chez Reutlinger*, were capital. Mr. Dunmore's paper on combination negatives was interesting and suggestive; as was Mr. Kaye's note on platinum toning. The remarks of Mr. Dallmeyer on the relative activity of lenses, showing that the effective diameter of a lens must be measured by the largest aperture with which it would work, and not by the amount of glass in it, were important as enforcing an oft-forgotten truth. A big lens which requires much stopping down is an absolute evil, as the thickness of the glass involved is an unnecessary element of slowness.

The South London had an interesting discussion on vignetting. The Bristol Society had an interesting discussion on lighting, in which able men declared very emphatically, and very wisely, against a dominant front-light. The other provincial societies have had pleasant meetings, which do not, however, suggest special comment.

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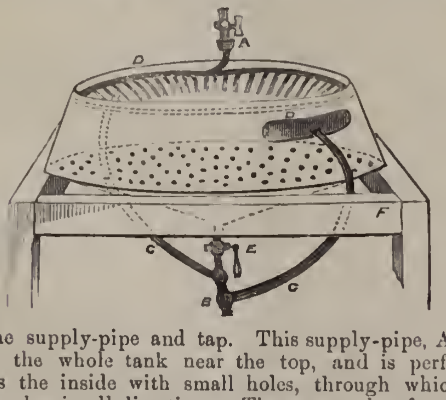
IMPROVED PHOTOGRAPH WASHING TANK.

BY J. CARBUTT.

[In our Tenth Volume Mr. Young described an ingenious washing machine, in reference to which Mr. Carbutt, in our Philadelphia contemporary, makes the following suggestions.]

To test the merits of this machine, I had one made, and found one or two points about it I thought could be improved upon. In the tank described by Mr. Young, the feed-pipe lays on the bottom of the tank, and the water was drawn off by a syphon, which caused many of the prints to be destroyed by the suction of the syphon as they lay on the perforated bottom. After trying several modifications, I adopted the plan as shown in the accompanying drawing.



A is the supply-pipe and tap. This supply-pipe, A, runs around the whole tank near the top, and is perforated towards the inside with small holes, through which the water gushes in all directions. The water, therefore, keeps up a constant motion—a sort of a mild whirlpool—among the prints, round and round, and yet without injury to them. B, the waste pipe; C C, waste pipes from the overflows, D D; E is a large tap to regulate the discharge of the waste; F, a wooden frame, twenty-four inches high, supporting the tank. The tank is made of galvanized iron, of the shape shown in the diagram, and is nine inches deep on the sides, thirty inches across the top, and thirty-six inches across the bottom at the widest part. The perforated bottom is thirty inches across, and soldered fast all around. The bottom of the tank slopes to the waste-pipe, leaving a space of three inches in the middle, from the perforated bottom to the mouth of the waste-pipe. The action of the tank is thus explained:—Let in the water by means of the supply-pipe, A, until the water reaches the overflow, D; now put in the prints. The tap, A, should then be turned on only sufficient to keep the prints nicely in motion, then turn the tap E, to let the water run out a trifle slower than it enters at A. The prints are kept in constant motion, and the hypo, as fast as eliminated, is carried out at the bottom, the waste overflow being independent of the tap E. I have always made it a point to see that my prints are fixed in fresh hypo, and well washed. After more than two years' use of this tank, I prefer it to either the ordinary overflow or syphon tank.

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QUESTIONS AND SUGGESTIONS.

BY A. DE CONSTANT.

On the Manufacture of Pyroxyline of an Equal and Unvarying Character.

It has always been a matter of surprise to me how everybody in the photographic world strives to produce, at any cost, something new, or to complicate unnecessarily processes in which simplicity is often the only merit. All this is, moreover, done at the cost of neglecting questions of supreme importance. Of the latter I could mention several, but will refer now merely to one which recent experiments have led me more particularly to consider; it is, that of pyroxyline, the principal constituent of collodion, and one of the most important compounds in connection with photography of the present day.

It may be affirmed that this is a question which has already been satisfactorily set at rest. Is this, however, the case? Do we all know, for instance, the immense difference which such and such a gun-cotton imparts to a collodion? Can we, by addressing ourselves to a manufacturer, always make sure of having exactly the article we require; or can the manufacturer himself, in furnishing a gun-cotton, state positively that the same will yield a permeable film or a horny one? To all these questions we cannot but reply in the negative.

When I demand of my chemist fused or crystallized nitrate of silver, absolute or rectified alcohol, ordinary or glacial acid, these articles are given me at once, and I am sure that they are what I want. These are materials regarding which there is no dispute; but is it the same with pyroxyline? Not the least in the world; we know neither what we have, nor what we have made with it, until the moment of failure teaches us, too late, the fact we ought to have known at the outset. And often, from ignorance of the subject, we go far out of our way to look for causes of failure which are alone attributable to the pyroxyline. Here, therefore, I think, is a question deserving of the consideration of our most eminent photographers, and which should be cleared up, once for all, so that manufacturers would be in a position to place definite materials at the disposal of purchasers. I myself humbly admit that I am incapable of considering this question from a chemical point of view, but, in order to testify to its importance, I propose to utter a simple recital of my own experience of gun-cotton in photography.

I shall not refer to my casual experience of finding a liquid mass enclosed in bottles, which I expected to find filled with good pyroxyline—as, thanks to Mr. Hardwich, we know the cause and remedy for this phenomenon—neither shall I allude to collodions which yield imperfect films, full of little holes, or which start from the glass surface at the moment of the negative being finished, although I am now aware that these failures, of which I have searched for the causes far and wide, are almost invariably due to bad or unsuitable gun-cottons. What I would more specially point to, however, is the necessity of having a particular description of pyroxyline for dry-plate photography, for my results have led me to mistrust the oft-repeated saying that any collodion which answers well for wet-plate photography is also very suitable for the preparation of dry plates. The most uncertain and inferior results have attended my plates when prepared with ordinary collodion, whereas, at the moment I adopted exclusively in my dry-plate work a Mawson collodion, possessed of the requisite amount of permeability and intensity, I experienced a regularity and certainty which before was unknown to me. At the same time, the tendency exhibited by this collodion to become solarized, as likewise, notwithstanding the application of a preliminary coating, its lack of solidity in being unable to support the gum coating, caused me to look about for another collodion, free from these disadvantages, and capable of yielding a firm and solid film. But, alas! my apparent triumph was of short duration, as with solidity of film came also insensitiveness, which increased in proportion to the age of the plates, so that, at the end of a certain period, not even the trace of an image was obtainable, and this with very long exposures and with the employment of all kinds of developers; and results such as these I was in a position to produce at will. It now occurred to me that I had, by chance, come across specimens of two varieties of pyroxyline, of the character pointed out by Dr. Van Monckhoven; and another proof was thus adduced of the importance which the nature of a gun-cotton has upon collodion destined for the preparation of dry plates, for I hasten to state that the same collodion which yielded insensitive dry plates gave good results with the wet process.

Although experience has proved that what Dr. Monckhoven has stated in regard to the photographic qualities of these two descriptions of gun-cotton is a true and useful representation, it is strange that this important question has not received the consideration it deserves; for while numerous recipes are given for the production of good collodion, and many explanations are offered in regard to the ether, alcohol, and iodides to be employed, not one word is said touching the gun-cotton, in regard to which it is considered sufficient to specify the quantity to be taken, as if there were but one sole manufactory of gun-cotton in the world, yielding a product always uniform and identical in character. This is, indeed, a subject for regret, and one which has already been referred to by Mr. Dawson, who, in 1868, published a statement on the necessity of employing a special collodion in the preparation of dry plates, and, at the same time, expressed his regret that a matter of such great importance should be so little known and appreciated, inasmuch as the production of good results was wholly dependent on it.

Thus, as I said at the commencement of these remarks, here is a question urgently requiring to be set at rest, and to do so it is simply necessary that photographers of reputation, and more especially those occupied in dry-plate manipulations, should urge upon manufacturers the advisability of specifying, by means of a number or other distinguishing mark, such pyroxyline as is prepared at a high temperature, in order that one may be always supplied with an article of the exact quality required; a collodion prepared with gun-cotton of the same kind might also be manufactured and furnished with a distinguishing mark or number. Arrangements of this kind, undertaken in commerce, would suffice to bring about a satisfactory solution of the question, and, so far as I can judge from the courtesy I have experienced from Messrs. Mawson and Swan, who kindly offered to prepare me any description of cotton I might desire, no difficulty would be met with in the carrying out of such propositions. For my part, I would support a step of this kind in every way, more especially as I find that the papyroxyline (a material we owe to the learned and valuable researches of Dr. Liesegang) is far from presenting, in dry-plate photography, all those remarkable qualities which distinguish it in the wet process.

Before concluding, I must apologize for the lengthened character of this communication; but if I am successful in causing my brethren to devote their attention and experience to the subject I have been discussing, I shall not have occupied my time in vain.

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COMBINATION NEGATIVES.

BY H. NEALE.

It has often struck me that much more difficulty is made of the printing combination pictures from several negatives than need be, and the letter of Mr. Barrett in a late number of the News has served to strengthen that opinion. He there shows how simply collodion films can be transferred from the glass; and Mr. Hemery's suggestion, to make one negative out of the several required to form the picture, has induced me to send you my idea as to how the thing is to be done with comparatively little trouble.

It is well known that a skilful use of the scissors is essentially necessary in all combination printing, and to those who are not adepts in the use of them, my suggestions are useless; but those who can use them will, I think, find the following method enable them to do almost anything in the way of combination printing.

Having each negative dry, either varnished or unvarnished (it seems to make little difference which), flood it with gutta-percha solution, such as described by Mr. Barrett, and, when dry, place in a dish of water, letting it remain for some hours, face upwards. The slightest trace of nitric acid in the water, and waxing the glass plates before taking the negatives, greatly facilitates the loosening of the film. When it is found, on raising the plate, that the film is becoming detached from the glass, take it very carefully out of the water, without letting the film slip off, and place it on a level board; then take a piece of thin plain paper, coat it with gum-water or thin gelatine, and place it carefully down on the film, pressing all air-bubbles out, and rubbing down with a pad of blotting-paper. Stand on end to drain, and in a short time the whole can be detached from the glass perfect. Of course, if left to dry in this state the paper would contract, and lessen the dimensions of the film attached to it. To obviate which, take another plate of glass, or a board, a little smaller than the paper, and having run a margin of strong gum or glue round the edges, fasten the paper, film upwards, on it, in the same manner as when stretching a sheet of drawing-paper to make a water-colour sketch on. It will then, when dry, be perfectly flat, and of its proper size. My reason for attaching the paper to the film is, that when transferred, it is very difficult to handle and keep flat whilst working with it afterwards; but when on the paper it can be handled with ease.

Having transferred all the negatives in the way I suggest, the picture can be arranged, and each film cut to the exact shape required, and matched to the others. The most difficult part of the work is now done.

Now prepare a plate of the required dimensions, either with a coating of india-rubber solution, gelatine, or any suitable material; place each film in its exact position, and press them down firmly together in a press, using a good pad of some sort to ensure the pressure being equal. When dry, the paper backing may be carefully removed by slightly damping it, and on removal the negative will be complete, with the same side of the film upwards as it first stood on the original plate; or, instead of putting the separate films, when cut out, direct on the glass, have another sheet of paper stretched on a board or glass, and, having first pasted each negative on the paper side, lay all down in their proper places; and, when dry, the plate on which they are finally to rest; or the films may be coated with the adhesive material, and pressed tightly together as before advised. The two paper backings can be as easily removed as one.

Of course, anything in the way of touching up or softening down with black varnish, &c., can be done, and the several parts printed or toned down as the taste of the producer dictates; but the great difficulty of *matching* will be avoided, and the picture will tone down of one uniform tint, which is not always the case when it is printed each part separately.

I hope soon to be able to describe a method of obtaining any outline without the use of scissors—in fact, such as could not be obtained by those instruments—but, at present, have scarcely matured it.

Should the above hints be thought worthy of attention, I hope some of our *skilled* photographers will make a trial, and report on the merits of the process.

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WINTER PHOTOGRAPHY, OR PRINTING BY DEVELOPMENT.

For Beginners and also for Practical Photographers.

BY PROF. J. TOWLER, M.D.*

Beginners have to learn, but older photographers know, to their annoyance, that, in the dark and shorts days of winter, printing on paper is sometimes a very slow and tedious operation, and sometimes almost impossible. Now, I am going to teach you how to alleviate this annoyance, and to give you a remedy for the evil. There is probably nothing new in the process, if analyzed critically, for the different parts were all known, and it remained simply to put them together, to synthetize the elements, and thus compound a practical process.

It is better to begin with prints on plain paper. I use Marion's plain paper, which can be had of any of the stockdealers. You first ascertain which is the right side of the paper and which the wrong side, by the method I gave you some time ago in reference to the albuminizing of the sheets. Mark the back of each sheet, so as to know it after the sheet has been sensitized.

Salting Solution for this Process.

Water	8 ounces
Chloride of ammonium	40 grains
Gelatine	10 „
Citric acid	40 „
Carbonate of soda	40 „

Filter the solution.

Let the gelatine soak in two ounces of the water for a few hours, then heat the mixture until the gelatine dissolves, and add it to the rest. It is better not to pulverize the citric acid, otherwise the effervescence might be troublesome, and cause a loss of the materials.

Let the paper float (right side downwards) on this salting solution for about two minutes, taking care to remove all bubbles from the surface of the paper. Hang it up to dry spontaneously, and afterwards pack away in a portfolio. The paper has to be sensitized before you can print with it. I use the following silver solution for this purpose, essentially the same as recommended by Dr. M. Carey Lea:—

Silver Solution.

Distilled or rain water	8 ounces
Nitrate of silver	4 drachms
Tartaric acid	8 scruples

If there is a white deposit formed, filter the solution, and add nitrate of silver to make up for the loss. (In my own laboratory I reduce the white deposit into pure silver by means of zinc and dilute sulphuric acid, and afterwards reconvert the washed silver into the nitrate, which is added to the stock solution. This is the work of a few minutes only.)

Float the salted paper in the usual way upon this bath for about two minutes, and then hang it up in the dark room to dry. Paper so sensitized will keep for a long time.

Exposure.

Place the paper over the negative in the usual way, and expose for a minute (or two during dark weather), that is, until you perceive through the negative glass that there is a slight change of colour. You may expose longer if you choose, but absolutely this is unnecessary. An impression has already been made on the paper, but, like the impression on sensitized collodion, it is latent, so to say, and it remains now to make the latent impression visible. This can be done in a very delightful manner, and various tones can be obtained intermediate between red and black, and without the intervention of any gold; notwithstanding all this, the pictures may be toned with gold, if you are not satisfied with the results.

Make the stock solutions as follows:—

No. 1.—*Acetate of Lead.*

Acetate of lead	2 drachms
Water	4 ounces

Acetic acid, drop by drop, to clear the solution.

No. 2.—*Gallic Acid.*

Gallic acid	16 grains
Distilled or rain water	8 ounces

Apply heat to the mixture, and the acid soon dissolves.

For present use we require two solutions, as follows:—

No. 1.—*For the Bath* (*Dr. M. Carey Lea's*).

Water	2 ounces
Acetate of lead solution	24 minims
Gallic acid solution	2 drachms

Acetic acid, sufficient to dissolve the white deposit.

This is placed in a suitable dish, and the exposed print is placed in it, taking care that it is completely covered and free from bubbles.

No. 2.—*Intensifier or Developer.*

Gallic acid solution	4 drachms
Acetate of lead solution... ...	5 drops
Acetic acid, about	15 „

Or sufficient to dissolve the deposit.

Take the print out of the dish as soon as it has been thoroughly soaked, and place it on a plate glass, and, holding the glass over the stove (in the dark room, of course), pour in the intensifier or developer upon the print, and off again, just as you would do if you were developing a negative. The picture will slowly increase in strength, and pass from light brick-red through gradual stages to an intense black. The heat of the fire in the stove is a great aid in this development. Hold the plate but a few inches above the stove (an iron plate heated by a lamp will do just as well). You will be surprised with what beauty the picture gradually advances; do not be impatient. Whenever the picture satisfies you, you can stop the further development by washing the print, after which it is fixed in hyposulphite of soda in the usual manner.

This mode of development proceeds to the black tone. If you desire pictures which are afterwards to be toned in a gold solution, we must keep more within the limits of the red tone. For this purpose we use the following deve-loper:—

No. 3.—*Developer.*

Gallic acid solution	4 drachms
Silver solution (from the bath)...	5 drops
Acetic acid	5 „

Develop with this as before (over the stove) until the picture is as intense as you want it, then wash well, tone, and fix as usual. But we can get the gold tone without the use of gold as follows:—

No. 4.—*Developer.*

Gallic acid solution	4 drachms
Acetate of lead solution	5 drops
Acetic acid	sufficient, &c.
Nitrate of silver solution ...	5 drops

Develop as before, and stop as soon as the print is a little darker than you want it. Wash and fix.

Prints obtained in this way are not far inferior to those printed by the sun; the whites, too, are thoroughly preserved, owing to the presence of the tartaric acid in the sensitizer.

Finally, when the prints are dry, you can coat them with plain collodion, which gives them an appearance of albumen prints.

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* *Philadelphia Photographer.*

DESCRIPTION OF A NEW KNAPSACK TENT.

BY WILLIAM HARVEY BARTON.*

The absence of any more important business is the only thing that induces me to take up the time of the Society with the description of such a trifling matter as my knapsack tent; but, on the other hand, its trifling character is its principal novelty, and shall, therefore, be my plea for reading this paper.

The tent which you now see packed up is complete in itself, and contains, also, a camp stool and focussing cloth; it can be carried on the back, in one hand by the strap, or under the arm as a portfolio, and its entire weight is a trifle over seven pounds. I will now proceed to unpack and erect the tent, a performance that will not occupy many minutes.

A very light piece of pine, with recessed tray of same material, forms the working table, size twenty-two inches by fourteen inches; size of developing tray, thirteen inches by eleven inches; from the under side of the table are fixed the three legs of bamboo cane which form the stand, and which screw into gun-metal plates the thread of which is made oblique for the purpose of splaying the legs sufficiently to give it a firm base; at the four corners of the table are fixed sockets of thin, hard brass tube, in which are inserted the four canes that support the cover (these are solid, of the sort known as rattan, and are about seven-sixteenths in diameter); in the ends of these canes, which have thin brass ferules, are inserted brass pins about one-eighth of an inch in diameter, and these pins are made to fit in holes at the ends of two canes that are sewed into the black calico cover. The supporting canes are cut sufficiently long to exert a strain on the top canes, and thus the tent cover is kept rigid in a very simple manner. The cover consists of two thicknesses of black twill calico. I am rather in favour of having the inner calico of a tent yellow; in that case it is necessary to use three thicknesses, but as it considerably increases the weight, I abandoned it in this instance, as lightness was my great object; and even now the cover is the heaviest part.

The tent has two windows, the larger in the centre in front of the developing sink, and the smaller at the left-hand side to light the bath; they are each provided with two covers of orange merino, which enable me to regulate the light to suit any degree of sun or shade. The bath (which will take a plate eight and a half by six and a half) fits into a hole of the required slope cut into the left-hand side of the table; this hole is lined with black velvet, and the bath fits into it perfectly light-tight, thus dispensing with the use of the black calico bag, which is continually rotting and getting out of order. The developing sink (entirely of varnished pine, and forming a part of the table) possesses many advantages over the folding sinks of mackintosh cloth, which are continually leaking, and frequently want renewing altogether, besides the saving of time in having a rigid one. Screwed to the centre of the sink are two pieces of wood, which form a developing stand, and a place to rest the slide on while putting on the plate. The upper part of the tent is so light that I could not fix any water cistern to it, a circumstance I do not regret, as I have adopted the plan of using a square tin can that fits over my sixteen-ounce developer bottle, and holds quite sufficient water for one or two plates, and can easily be replenished from the larger can in which I carry my negative and plate-boxes. Since adopting this method, I have liked it much better than the cistern overhead with pipe and spring clip.

If, when working, I wish to move my tent any moderate distance, I can do so without packing it up, merely screwing the tight top on the bath. It is so light that I can carry it on my head or shoulder with the greatest ease. This is an advantage that should not be overlooked, as it obviates the necessity of making long excursions to and fro between the camera and tent, which (in hot weather especially) is both tiring to the operator and deteriorating to the plate. I should, perhaps, have mentioned before, that this tent is constructed for working in the sitting position. This I consider a great advantage, as the tent, standing lower, is not so powerfully affected by wind, and can be kept lighter for that reason; and, in cases of protracted development, there is less disposition to hurry the operation when seated comfortably on a camp stool than when standing.

In taking down and folding up this tent, it is only necessary to spring the four supporting canes out of their brass sockets, unscrew the three bamboo legs, place them, with the camp stool, on the table of the tent, then wrap the cover round and round it, and fasten on the straps, which serve the double purpose of keeping it together, and suspending it from the shoulders.

Having now described the construction of this tent, I will say a few words on the advantages it possesses over tents intended to contain apparatus:—

The worst of these are tents constructed to carry everything, forming—even for small sized plates—very bulky, weighty, and unmanageable packages to get into the field. To convey them there the following methods have been suggested:—

Firstly. To sling the package, by two ears of leather, on to a long pole, to be borne on the shoulders of two individuals. Now this is an admirable plan as far as division of weight is concerned, and is, perhaps, the easiest way of carrying such an unwieldy article; but, on the other hand, what two individuals are supposed to take part in this very Chinese way of doing things? Are they to be hired porters, or the photographer and his assistant? The first would be attended by great expense, even if porters were always to be had when wanted; and as for the photographer and his assistant (though, perhaps, not more noted for pride than other men), they might object to such a sensational style of doing photography.

Then the idea suggested itself of putting the tent on wheels; but, considering that it is often impossible to get anything on wheels within a considerable distance of the desired spot, or (if possible) that a long detour has generally to be made in order to attain it, I think all will admit that there is a sufficient objection to arranging apparatus in this way. On the other hand, with a knapsack tent, involving, as it does, an entire re-arrangement of apparatus, the idea suggests itself of sub-dividing it into smaller and more convenient packages, which can be so distributed in the pockets and the hands and hanging to the back of two persons as not to overtax any part of the body, but to render progression almost as easy as with nothing to carry.

I carry my camera in a very light case made of pine, with the lenses separate in leathern cases, on a strap which slings over the shoulder; the clean plate and negative boxes I carry in the water-can, which also contains a plate-holder, cloths, and leather-brush, and four small bottles containing collodion, &c.; my developer I carry in a sixteen-ounce bottle, which is protected by a tin water-cup which slips over it (this finds a place in one of my pockets); my bath of gutta-percha in mahogany case, which requires but sixteen ounces of fluid, I carry by a leathern strap over my shoulder.

Much might be said in favour of the appropriate subdivision of apparatus.

I never need to unpack my tent unless I am going to use it; the same with my camera and lenses; and I am enabled to replenish my chemicals, fill my box with clean plates, remove my negatives, filter the bath or change it for a new one, without disturbing other portions of my apparatus. Now, with a tent made to contain everything, the contrary is the case; the tent has to be unpacked, and nearly everything taken out, before negatives can be reached, or the slightest change made in the chemicals; and, in the state of confusion thus caused, things are apt to be left till the next time of using.

But I am afraid I have been too prosy on mere details of practice, for, after all, the pictures are the things. The particular form of tent they were produced in is perhaps of little moment; and when the London Photographic Society holds its next exhibition in Conduit Street the crowd of admiring critics will trouble themselves little about the means adopted, so that the end is attained.

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* Read before the Bristol Photographic Society.

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PRINTS AND THEIR PRODUCTION.

BY S. T. DAVENPORT.*

Surface Blocks.—I have said that commerce in art demanded in past times a higher productive power at a reduced cost; the same demand still exists. Much as the processes of production have been simplified by means of lithography and wood-engraving, still much time, labour, and cost, to say nothing of loss of artistic character and effect, too often attend the translation of the artist's design into a surface from which to print. This has led to a desire for the introduction of some process by which the artist's own sketch may be made the base from which the printing surface may be produced. In aid of this object, there are one or two processes which appear to be waiting a fuller development of their powers, and to be deserving of more attention than they have hitherto received in this country.

Such is the process of M. Dulos, a process almost unknown in England. It affords much force, as well as great gradation and softness of effect in the print obtained. The blocks themselves are absolute reproductions of the artist's own work, obtained by means of an amalgam of metal formed upon the drawing itself. Upon the process itself a report was issued by the Societe d'Encouragement of Paris, which is published in vol. xi. of the Bulletin of that Society.

The graphotype process also appears to me to be capable of much refinement in the hands of competent artists, and affords a ready means of obtaining surface blocks from which a large amount of commercial work might be printed in the ordinary printing machines.

Split Prints.—I may here mention, incidentally, that, as wood-block printing superseded the copper and steel-plate prints used in illustration of our literature, the practice which had been followed, in many cases, of issuing separate proof impressions, was not followed in wood-block printing, and, as a result, collectors were deprived of the facility which they had possessed for forming collections of portraits, plans, views, &c., or were reduced for a time to the necessity of introducing into such collections impressions cut from the body of the work in which the block had been published. This was but seldom done, owing to the fact that the prints so obtained were, in the majority of cases, unsatisfactory, as the typo impression at the back of the wood-block generally destroyed much of the artistic effect. This has led, of late years, to the introduction of a process for splitting prints, and split prints are now mounted for collectors' folios. The specimens exhibited illustrate the utility and advantage of the process, which is simple, certain in its action, and free from risk of injury to the print itself. The same system is now commonly applied in splitting hard papers upon both the back and front of which drawings or etchings by eminent artists have been made.

Photography.—Photography, the process by which landscape scenery and natural objects have of late years been so beautifully rendered, has hitherto been wanting in the one important element of permanence. In speaking of photography as I am about to do, I must not be supposed to overlook the fact that it has been, and still is, in the main, a copying process; but I believe that at the present time a new class of artistic studies is being created by its means, and new paths for the development of its powers are opening up.

It is just thirty years since the discovery by M. Daguerre of a means of fixing upon the surface of a silver plate the image obtained in the camera was given to the world by the French government. Though the results obtained by M. Daguerre were permanent in their nature, they were destined soon to be superseded by the discovery which Mr. Fox Talbot made of a means of fixing a like image upon the paper. All attempts to obtain a multiple of prints from the Daguerreotype plates failed commercially, and the power of obtaining prints by the partial transmission of light through a sheet of paper which had had an image impressed upon it by the agency of light was hailed as a great advance. Mr. Fox Talbot was not, however, satisfied with the results he then obtained. He sought a means of fixing the image upon a metal plate, so as to admit of prints being taken by the ordinary printing process. Though Mr. Fox Talbot accomplished much, and succeeded in obtaining prints from engraved plates, still, in the main, he failed to effect his object, and it was not till 1852 that the public became aware of the importance photography was likely to assume in reference to the future progress of industrial art.

(*To be continued.*)

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Correspondence.

PERMANENT SENSITIVE ALBUMINIZED PAPER,

AND FALLACIES AS REGARDS THE AMOUNT OF NITRATE OF SILVER USED TO SENSITIZE A QUIRE OF ORDINARY PAPER.

Dear Sir,—As, of late, a great deal has been said upon the above subject, perhaps you will kindly allow me a few lines. The following are the advantages of a ready sensitized paper:—

1st. The printing-frames can be placed out the first thing in the morning instead of having to wait until paper can be prepared and dried, and thereby much valuable time is saved, and toning can be commenced much earlier in the day.

2nd. If a customer wants a proof in a hurry, the paper is always ready.

3rd. If, through bad weather, the paper is detained for days in the printing-frame, the whites are not injured.

4th. Several days', or even weeks', printing may be done, and the toning left to the convenience of the amateur or other operator, without danger to the whites of the print.

5th. All the mess of cleaning dishes, mixing and filtering baths, &c., is entirely avoided.

It will be asked, against all these advantages, what are the drawbacks? I reply, that beyond a very slight additional cost, there is no drawback whatever. Of course I am speaking now of my own experience; such paper prints faster than ordinary paper; it tones as richly, and the prints are quite as brilliant and vigorous, and even more so. It is used by the very highest class photographers in London (as you, Mr. Editor, happen to know), which is a proof that what I have said of it is correct.

Now as regards the amount of silver used in sensitizing a quire of ordinary abuminized paper. There is a general, but mistaken, notion that if a quart of nitrate of silver of (say) forty grains to the ounce be mixed, and, always after use, filled up from a stock bottle of the same, that the strength is kept up. This is not the case; for besides the quantity of solution taken up by the paper, the remainder of the bath is weakened to a fearful extent, so that every time it is replenished from the stock bottle it is weaker and weaker, and soon some fresh nitrate of silver without water becomes indispensable.

If an eighty-ounce bath containing fifty-five grains of nitrate silver to the ounce be made up, and a quire of paper floated containing a medium proportion of salt, the paper will take up about ten ounces of the bath, or about one and a-quarter ounce nitrate silver, and will have weakened the remaining seventy ounces at the rate of about five grains to the ounce, so that the quire of paper will have taken up two ounces of nitrate silver.

I think photographers, in calculating the amount of silver used, generally forget to take into account the loss of strength of the remainder of the bath left in the dish.

Every quire of my ready sensitized paper takes up one and three-quarter ounce of nitrate silver, which is sent out in the paper, and the greater part of which can be recovered by the printer from the washings. I have often attempted to prepare a ready sensitized paper with less than one and three-quarter ounce nitrate silver, but it has always resulted in loss of vigour and bronzing power.

As regards the secret of the paper; as it is bringing me in a certain income I cannot be expected to divulge it, unless the profession could propose some other way of remuneration, when I should be happy to put them in the way of preparing it themselves. I had a whole year's hard work and experiment to go through before I arrived at the present result, and I have testimonials from the first artists of the day speaking of it in the highest terms.—Yours truly,

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* Continued from p. 44.

C. Durand.

HIRING APPARATUS.

Sir,—It appears to me to be a particularly good suggestion that the "piano system" of hire should be adopted, but I doubt whether our best opticians will think it worth their while to do business in this way. Some dealer in second-hand apparatus—such as Mr. Morley, of Islington—might be induced to adopt the proposed plan. It would be especially useful to those who wish to try several lenses before purchasing. This trial, except in very rare cases, cannot now be had; the maker's description of the power of the lens must generally be taken for granted. I admit that our leading opticians usually describe their lenses fairly enough. Still, this does not do away with the necessity of actual trial. During my photographic experience I have acquired lenses which I should not have bought had I had the opportunity of a practical trial.

I do hope all your correspondents who think "N. T. G.'s" plan would be useful will at once support it enough to induce some photographic dealer to adopt it during the coming out-door season.—I am, yours faithfully,

February 5th, 1870. Oxoniensis.

Dear Sir,—I have been very pleased to see the suggestions of several correspondents in the News relative to the hiring of apparatus, as I am in hopes it will lead to a practical issue by inducing some of our leading houses to initiate such a system. I for one would be glad to avail myself of such a mode of procuring good lenses, for although at the present time I have nine different lenses selected with great care and consideration from Ross and Dallmeyer, I still find that I require others to produce satisfactorily the various commissions I am entrusted with, and as lenses are a very expensive item, it becomes a matter of serious consideration with many successful and careful photographers whether they should purchase such lenses, that are only occasionally required; but I think if the suggestions of "H. R." and others were adopted, they would not long hesitate about it, but hire them at once, and by so doing would soon produce better work, which would be a great incentive to purchase if payable by a few monthly instalments. Ut Supra.

Bristol, February, 5th, 1870.

Dear Sir,—I was pleased to see "N. T. G.'s" letter in your last number respecting the above, and also your remarks, and hope it will be the means of some commercial firms giving it a trial. In order to show that such a thing would have been beneficial to myself, I give you a case in point.

Some few weeks since I was asked to supply some large views of a church, size not less than sixteen by fourteen. My camera being only a twelve by ten one, I wrote several photographic friends, but only one had apparatus sufficiently large, and he did not like the idea of lending, but offered to take the view; but I found the expense of his travelling between thirty and forty miles, and one day's time, would make the negative cost so much that I was compelled to decline the order.

I have no doubt many have experienced the same difficulty, and trust, now the subject has been brought forward in your pages, you will lend a helping hand to bring about the desired result.—Yours truly. J. P. C.

Grape Cottage, Sleaford, February 2nd, 1870.

Sir,—I am glad to see an idea started in your columns by our amateur friend "N. T. G.," calculated to be of great service to many of our brother photographers, both amateur and professional, and, I should think, likely to prove remunerative to the first tradesman to act upon it. I allude to the idea of "hiring apparatus." It often occurs that orders are received requiring a description of instrument the photographer is not in possession of, and it would not suit him to purchase. If he could get the required instrument on easy terms, it would benefit both himself and the tradesman. This would also lead to the purchase of many good instruments, and do much towards advancing the beautiful art of photography, by placing good instruments within the reach of those otherwise unable to purchase them.

I would propose that instruments be hired to respectable photographers, either in town or country, at a fixed rate in proportion to their value, on their producing satisfactory references, and paying carriage of the same; and should the hirer wish to purchase them, or any part of them, he may do so by stating his intention, and paying such monthly or quarterly sums as will make them his own property in a given time, as suggested by our Manchester friend. If this could be effected, it would be a great boon, and would raise the standard of work very much.

Hoping some respectable tradesman may think this worth a trial, I am sure our worthy editor will join me in wishing him every possible success.—Yours truly, W. P.

Sandgate, February 7th, 1870.

RETOUCHING NEGATIVES.—COMBINED NEGATIVES.

My Dear Sir,—I observe, in last week's issue of the News, "Stellar Polaris" ascribes to me the silver paint for touching made with varnish, and I wish to say, in reference to it, I merely adopted it from a recommendation in the News (by whom I forget). It has come to be associated with my name from the fact of your having stated that you saw its use in my studio when you did me the honour of paying me a visit in 1868. I have no doubt the modification suggested will be very useful, but there is this drawback to everything used for such a purpose if an aqueous solvent be used: in damp weather the *touching* takes up silver from the paper, and darkens with every print. I have for some time past preferred the lead pencil for retouching the negative.

With the return of fine weather, I hope to be able to devote a little more attention to the production of combined negatives. I am quite sure that a great deal may be done in that way.

I can recommend the plan, mentioned by your correspondent, of using a transparent tissue for masking in double printing. Where small and intricate work is necessary, it is an excellent plan, and answers well. I prefer talc for the medium on which to paint the mask, and Bates's black varnish, diluted with benzole, is an excellent material for painting with.—Yours very truly, J. M. Burgess.

Queen Street, Norwich, February 7th, 1870.

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Proceedings of Societies.

Marseilles Photographic Society.

A meeting of the Society was held on the 5th ult., M. Teisseire, President, in the chair.

MM. Geymet and Alker presented the Society with a copy of their recent work on Enamel Photography.

M. Vidal promised at a future meeting to demonstrate the process of producing photographic enamels, and suggested that an initiative practice of the manipulation might take place among the members in the same way as in the carbon printing process some time since.

M. Poitevin promised his valuable aid for the purpose.

MM. Pellissier, Brion, and Cayol exhibited specimens of carbon printing, and were congratulated by the President as further supporters of that process, which had now been introduced commercially into all the more reputed photographic establishments in Marseilles.

M. Teisseire showed some carbon stereoscopic transparencies, and M. Vidal some specimens of glass and porcelain ornamented by means of the same process.

The President called the attention of members to M. Vidal's newly constructed photometer.

M. Vidal complained that M. Marion had read a paper before the French Photographic Society describing an improved Vidal photometer, which, however, far from being of improved construction, possessed many of the earlier faults of that instrument.

M. Pouget suggested the construction of a photometer based upon the employment of transparent yellow glasses, through which the actinic rays could pass, and the degrees be observed, without the trouble of opening the instrument.

The President congratulated M. Pouget on his happy suggestion, and recommended that gentleman to construct a model instrument of the kind.

M. Taylor urged the advisability of having a photometer capable of showing not only the actinic, but likewise the physical power of the light.

M. Poitevin suggested the use of coloured gelatine or nitrate of silver in the preparation of the yellow glasses.

M. Vidal described another photometer very similar to the one suggested by M. Pouget.

The same gentleman also called attention to the fact that the fixing of the carbon prints in alum rendered them very difficult to retouch, and recommended, in the case of enlargements, where considerable working up with the brush is necessary, the omission of that operation.

The proceedings then terminated.

French Photographic Society.

A meeting of the Society was held on the 7th ult., M. Balard, President, in the chair.

M. Marion exhibited some specimens of carbon printing. illustrative of certain improvements which he had effected in the process.

M. Despaquis remarked that the end arrived at by M. Marion was similar to his own results, but that M. Marion's process lacked the simplicity enjoyed by M. Despaquis' method.

The President made some remarks with reference to the forthcoming Paris Exhibition. He stated that photographs previously exhibited would be admitted, and that the arrangements respecting the award of medals would be as follows:—

"All exhibitors will be invited to the Society's rooms, No. 9, Rue Cadet. on Friday, the 20th May, at eight o'clock in the evening, to nominate a special jury of awards, the election being conducted by the voice of the majority. Such French or foreign exhibitors who are unable to assist at this meeting may send their votes in a sealed letter bearing their signatures; the communications must be addressed to the Secretary, and reach their destination before nine o'clock on the evening of the 20th May. The special jury of awards will be composed of eleven members, but the administrative committee reserve to themselves the right of adding two additional foreign members, in the event of the committee being of opinion that exhibitors from abroad are not adequately represented. Any exhibitor who is a member of the jury will be disqualified to receive an award."

M. Soulier, in the name of the commission appointed to elect a deserving candidate for the annual medal of 1868, stated that no award had been made for that year, and recommended that the competing candidate may be again admitted this year to contest the medal. MM. Davanne, Ferrier, Jeanrenaud, Girard, Peligot, Civiale, and Bertsch were nominated as a commission for the purpose.

Dr. Van Monckhoven read his paper on a New Artificial Light, and exhibited his new method of enlarging, in the presence of the members.

The proceedings then terminated.

Bristol Photographic Society.

Ordinary meeting held at the Philosophical Institution. Bristol. Thursday, 27th January, 1870, Mr. Ennel, V.-P. in the chair.

The minutes of the last meeting having been read and passed.

Mr. W. H. Barton read a paper on his new knapsack tent, in the course of which he erected his tent in two and a half minutes (see p. 67).

Mr. Beattie expressed his admiration of the simplicity of the tent, and the quick mode of erection.

Mr. Dunmore then asked how the tent would stand against the wind.

Mr. Barton explained that the upper part of his tent being constructed with light canes enabled the cover to give somewhat to the wind, and that if he took the precaution to slip the strap of the water-can round one leg, and the strap of his camera box round the other leg, he would obtain a sufficient weight to resist any amount of wind.

Mr Gillo thought that this tent was a great improvement on the one he used. which was constructed on Mr. George Wilson's plan, and of which he proceeded to give some particulars. The worst of this tent was that he had to sit in a rather cramped position.

In reference to a remark of Mr. Gillo's, Mr. Barton stated that his tent was constructed to work plates up to eight and a half by six and a half inches.

Mr. Gillo thought that even twelve by ten plates could be worked in it; but if not, a slight increase in the dimensions would, without materially increasing the weight, enable it to be used for such a size.

Mr. Ennel said he liked Mr. Barton's tent in every particular, but thought the only objection to it was want of ventilation. He then rose to explain a ventilator in the shape of the letter Z, which he had adapted to a dark room he once worked in. and which he found to answer the purpose very effectually. He then drew a diagram, and explained to the members, by the aid of lines, how rays of light incident on the opening of the ventilator would be thrown back by reflection, and thus prevent all actinic light from entering into the room. He thought if a ventilator of this form could be added it would much improve the tent. A diagram of it appeared in the *Photographic Journal*, December, 1859.

Mr. Barton then stated that he had not felt the want of ventilation in his tent, and asked Mr. Ennel of what material he proposed to construct such a form of ventilator to adapt it to a tent.

Mr. Ennel said he should make such a ventilator of black calico, kept distended by spiral springs.

Mr. Gillo suggested that a small india-rubber tube would allow of ventilation without light.

Mr. Beattie suggested breathing through an india-rubber tube to obtain fresh air. He considered the tent must have been the result of much experience, and thought he was also of the opinion that Mr. Ennel's proposed ventilator would not let out the ether, which would not rise.

Mr. Ennel stated that he thought ether would rise to some degree.

Mr. Barton said its gravity was greater than the air, and it must fall; he also stated he had never experienced ill effects from ether, except when working eighteen by sixteen plates, and that was in a large well-ventilated carriage.

Mr. Clarke asked Mr. Barton if he fixed his negatives in the field.

Mr. Barton stated that he did not, as a rule, fix in the field. but used negative boxes containing wet pads at the top and bottom, which effectually prevented the plates from drying.

Mr. Gillo stated he never used any water in the field, but after development he flooded the plate with a solution of golden syrup.

Mr. Barton said he had never adopted this method; he thought that when the highest degree of technical excellence was desired, it was best attained by having an ample supply of water to stop the development at any moment. Negatives were very frequently "made" by judicious manipulation in the field, and water was an indispensable necessary of this operation.

Mr. Beattie said the finest results must always be obtained by the use of water.

Mr. Dunmore spoke of a new agent for cleaning obstinately dirty plates.

Mr. Beattie remarked that the best remedy was to smash them.

Mr. Barton had never had experience on the point, as he always took care to use clean plates.

Mr. Barton subsequently called the attention of the Society to the Year-Book of Photography for 1870, which he said contained original articles of great interest and merit, by some of our most esteemed and eminent photographers, and which he thought would be particularly interesting to the members of the Bristol Photographic Society, as it contained several articles on a subject which has lately engaged a great deal of their attention, viz., glass houses and lighting.

Mr. **Beattie** then referred to an able article in the "British Journal Almanac" on the subject of lenses now used in photography.

A vote of thanks to Mr. Barton was then proposed by the **Chairman**, and carried unanimously.

This terminated the meeting.

Photographic Society of London.

The annual meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, the 8th inst., Mr. J. **Glaisher**, F.R.S., in the chair.

The minutes of a previous meeting having been read and confirmed, the following gentlemen were elected members of the Society: William Bedford, Lieut. Scott, R.E., and Robert Ramsay.

The **Chairman** then read the treasurer's report, from which it appeared that the financial condition of the Society had improved very considerably during the year. He explained that an active financial committee, of which Dr. Mann was secretary, had been engaged during the year, and to their labours much of improvement in finances was due. The position of the Society was fairly considered: the back stock of Journal, estimated at £100, were now estimated at £15, all considerations of doubtful value having been eliminated; and the balance against the Society was now £67 6s. 4d. At the next annual meeting he believed the financial position of the Society would be much better still.

The **Chairman** then read a very full report of the council, which was very satisfactory, thirty-one new members having been elected during the year, and only eight lost by death or resignation, the numbers being now two hundred and forty-three, against two hundred and twenty last year. The report concluded by stating that it had been resolved to issue the Journal only during the actual period of the Society's session, and to confine it chiefly to the record of the transactions of the Society, a proceeding whereby a great expense would be saved.

Mr. **Peter le Neve Foster**, in moving the adoption of the report, said that a report so copious and satisfactory ought not to be passed by with the ordinary formal motion for its adoption, and he believed he expressed the feelings of the members generally when he cordially thanked the council for what they had done during the year. There was one point on which he would venture to throw out a suggestion, in order to elicit the feelings of members generally. It was, he could not help thinking, a matter for grave consideration as to how far it was worth while to continue the existence of the Journal at all. There was a time when it was not only useful, but necessary; but now there were two weekly journals in existence. Both these journals reported the proceedings of the Society at least as well as their own, and he could not but ask whether, under these circumstances, it was desirable to maintain a journal, at great expense, merely to record the proceedings of the Society. No doubt this had been duly considered in council, but it might be worth considering now in the Society whether the result was worth the cost, when they were so fully and efficiently reported in the journals he had named. If they got rid of the Journal they would soon get out of debt. He had much pleasure in adopting the report, however, in its entirety.

The **Chairman** said Mr. Foster was right in supposing that this matter had been fully discussed in council. Every phase of the subject had been considered before the present step had been decided: and, speaking for himself, he might state that he, for one, should decline to preside over a society which depended upon commerce or outside journals for the publication of its reports. When a gentleman read a paper before that Society, the least compliment it could pay him was to print and publish that paper. The possession of an organ of their own was the only link which could bind their country members to them; and although they might lessen cost by giving up the Journal altogether, it would certainly reduce income, and perhaps destroy the Society altogether.

Mr. **Hart** fully agreed that the Society should be freed from a commercial character, and suggested that advertisements should be removed from the Journal.

The **Chairman** did not see any objection to advertisements so long as they were confined to the wrapper.

Mr. **Fry** suggested that the publication of an annual report of the transactions might be less expensive, and quite as interesting as a monthly record.

The **Chairman** said any gentleman who had contributed a paper to the Society would, as a rule, like to see it circulated as soon as possible.

The Rev. Mr. **Heaton** said, as a country member, he should deprecate the cessation of the Journal. Those not resident in town could rarely attend meetings, and they looked forward with interest to the Journal. Without it they would have really nothing to show for their subscriptions.

Dr. **Mann** said the Jounal had been the means of plunging the Society into a debt which had well-nigh strangled it. If, by the adoption of the plan now resolved upon, of confining the Journal chiefly to the transactions of the Society, and issuing it during eight months instead of twelve months, the Society could be got out of debt, all would, he thought, agree to such a course. At any rate, it was worth trying. The time was when the Journal of the Society was most desirable, and it had done much for the art. The occasion and necessity were passed, and the Society had no right to indulge in a publication which placed and kept them in debt. A middle course was to be tried, but he would say that he could not sanction their issue of a journal of any kind unless it could be done without bringing the Society into debt. He hoped that the course now decided upon, and the advantage they had in such an excellent editor as their present honorary secretary, would be found satisfactory, and, after getting rid of debt, they might consider the question of publishing their transactions in the most favourable form without reference to cost.

Mr. **Francis Bedford** seconded the adoption of the report, which was carried.

The **Chairman** read rule seventh, and said that as no new nominations had been made, the gentlemen proposed in December would now become officers of the Society. The list of officers would stand as follows:—

President—J. Glaisher, F.R.S.

Vice-Presidents—The Rev. J. B. Reade, M.A., H. W. Diamond, M.D., F.S.A., Arther Farre, M.D.

Members of Council—H. P. Robinson, Sebastian Davis, J. E. Mayall, Jabez Hughes, G. Wharton Simpson, M.A., F.S.A., R. Manners Gordon, W. England, M. Whiting, Jun., Wm. Mayland, Dr. Mann, V. Blanchard, H. Baden Pritchard, J. R. Johnson, Sir Charles Wheatstone, F.R.S., Prof. Stokes, F.R.S., D.C.L., and R. W. Thomas.

Treasurer—Henry White.

Secretary—J. Spiller, F.C.S.

Dr. **Mann** proposed a vote of thanks to Mr. Mayall for his admirable portrait of the president presented to members of the Society, which was seconded by Mr. Sebastian Davis, and carried.

Mr. S. **Highley** then read a paper on the magic lantern considered in relation to photography, which was illustrated by examples of various forms of improved apparatus.

After a vote of thanks, it was announced that Mr. Mayall was expected to read an important paper at the meeting which would take place March 8th.

The proceedings then terminated.

Talk in the Studio.

Photographic Exhibition in India.—The *Athenæum* says that the photographic exhibition at Calcutta is spoken of less favourably this year than on former occasions.

Photographic Reproduction.—The same journal says that "a handsome album is being published in Florence, containing photographic reproductions of the writing of Italian artists from the twelfth to the seventeenth centuries. Each part will contain twenty-five autographs, and a biographical notice of the writer." Photographic reproductions of various works of art are highly praised in the same pages.

Collodion Positives in America.—A somewhat singular illustration of the power of photographers to create the fashion in portraiture exists at the present time in the United States. Soon after the introduction of cheap card portraits, the producers of cheap collodion positives seized the idea that the card was a more popular style of cheap portraiture than the cheap glass positive, and the producers of high class collodion positives found it impossible to compete with a style of portraiture which permitted a dozen attractive photographs to be supplied for the price which it was necessary to charge for one fine glass picture, and, accordingly, collodion positives rapidly and completely passed out of attention. In America the producers of "ambrotypes" and "ferrotypes" had more faith in their style of work, and continued their practice of producing the various forms of collodion positives for the public, who, being guided largely in their choice by the photographer, continued to accept this style. At this moment the "ferrotype," a collodion positive on enamelled iron plates instead of glass, is a favourite with the American public, and a society exists in Philadelphia entitled the "Ferrotypers' Association of Philadelphia," holding regular monthly meetings, at which interesting points concerning technical and commercial questions are regularly discussed.

A Marvellous Monkey.—A contemporary says:—"That she-monkey brought from the East by the Empress of the French has begun to pay the penalty of the greatness which has been thrust upon it. No less than fifteen photographers, who are all announced as 'devoted to the reigning dynasty,' have applied for the honour of perpetuating the features of this new member of the Imperial House. If the right should be accorded to any of them, we shall not only pity the poor little quadrumen the torture of having to sit still for its portrait, but we may also inspect with some interest the series of portraits of the Imperial family which may appear in shop windows and in albums. Will the series hereafter be held as complete without the picture of this female monkey, which is now the talk of Paris, and which, now that the Emperor's faithful dog is mentioned no longer, is more identified with the dynasty than any other living thing which is not of its blood?"

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To Correspondents.

G. P. W.—In the recipe given by Mr. Tunny the soaked gelatine and methylated spirit should, of course, be submitted to heat until the gelatine dissolves. The application of heat you have probably omitted. The solution will answer admirably for preparing the surface of albuminized prints to receive colour. Sponging the surface with dilute ox-gall is another mode of securing the result. Newman's sizing preparation answers the purpose admirably. The same sizing preparation will serve for the surface of plain paper, and will prevent the colour from sinking in. Let us know if you succeed.

H. P. Banks.—Year-Books for 1865, 1868, and 1869 are, we regret to say, out of print; 1866 and 1867 can still be obtained.

G. F. S.—We have very repeatedly published instructions for enamelling, both in former volumes and in our Year-Books; but we here briefly repeat the details. Coat a clean plate with tough plain collodion, care being taken to select a sample which dries quite transparent. When the film is dry, apply a warm solution of gelatine, one ounce in six of water. When nearly dry, but still feeling a little tacky, take the print from a dish of water and apply to the gelatinized surface, pressing away the water in an even wave, so as to avoid air-bubbles. Leave for some hours to dry; then run a penknife round the edge, and the print will leave the glass with the enamelled surface of gelatine and collodion.

Allan Hamilton.—The magnesium lamp can be obtained at prices varying, according to size, from 30s., upwards. The complete enlarging camera, including magnesium lamp, suitable condenser, double combination, enlarging lens of suitable focus, &c., can be had for £6 6s. Write to Mr. Solomon, Red Lion Square, who will send you a list with full particulars. 2. The example of Rembrandt card portrait is exceedingly fine, delicate and vigorous, finely modelled, the light and shade rich and happily managed.

Major G.—Many thanks.

G. Iffland.—You do not state in what way the lime bath has failed you, hence we cannot suggest a remedy. The print received is a very fine warm tone, but is not black. It has all the characteristics produced by the acetate bath. Bear in mind, to get rich tones you must have vigorous negatives.

Oxoniensis.—We believe that the first-mentioned lens will effect all that the other will, besides, when necessary, taking a larger picture. The actual focus is, in each case, nearly the same. We are glad you are pleased with the Year-Book.

G. Haberer.—No dimensions were stated, and we never mentioned any; but, so far as our eye and memory serve us, the case was about thirty inches high and sixteen inches deep and wide. The combined focus of the condensing lens was about six inches, we should think, but have no certain information.

J. B. Mackenzie.—The revolving camera front you propose will doubtless answer the purpose intended, and we see no objection of any kind to its use.

W. H. Barton.—Many thanks.

N. T. G.—A quarter-plate portrait combination would be most likely to answer your purpose. As you will again see, the subject has excited much interest, and will, we hope, have a practical issue.

F. W.—The system, we believe, practically answers well. The only light which could enter is that reflected from the ground, which is so slight that it does not produce appreciable injury. We do not know Mr. Whiting's present address. The prints have not yet arrived; but we have no doubt that some of your best will be worth sending to next exhibition. The advantage of becoming a member of the Photographic Society consists in receiving its Journal, containing reports of the transactions of the Society, and presentation prints, and in belonging to a body which aims to promote the interest of photography. There is, of course, some pleasure in belonging to such an association. Just before going to press, we have received your specimens, which confirm our opinion that you should send some of your best to the exhibition. The chief fault in the enlargements seems to belong to the negative, every slight blemish in which is, of course, magnified in the enlargement.

J. P. Curtis.—Thanks. We are obliged by your good opinion.

No Name.—A correspondent, who gives no signature, is good enough to point out what he conceives to be a defective sentence in the News. We are obliged for the suggestion, because of its courteous intention; but we think our words better expressed our meaning than those our correspondent suggests as a correction.

T. R. Lane.—The behaviour of the redissolved carbonate of silver is puzzling, and we have not met with anything of the kind. Are you certain that all the materials used were pure? We will give the subject some further attention, and if a solution of the difficulty occurs to us we will let you know.

J. W. Blake (New Haven, U.S.).—The annual subscription for the News by post is 17s. 4d.; 13s. for the News, and 4s. 4d. for postage.

P. M.—The perfume which you suppose to belong to the sample of nitrate of silver forwarded, appears to us to attach to the blue paper in which it is wrapped. The nitrate of silver might derive some organic contamination from such paper, which may, however, be easily got rid of by neutralizing and sunning the solution. 2. The cetograph is a toned transparent positive, to which a thin coating of white wax is applied. The white portions, the lips, the cheeks, &c., are somewhat roughly coloured with water colours, and the whole then backed with a piece of cream-tinted paper, which supplies a suggestive local tint for flesh, which, with the rough tinting, has a good effect. The picture is then put up in a case, and viewed through the glass. Photo-crayons may be treated in a similar manner, or the backing paper may be tinted.

W. Lawton.—The number of the News you require is out of print, but we subjoin the extract giving Petitjean's silvering process:—"Prepare two argentiferous solutions. For the first, take 180 parts of nitrate of silver, which treat with 62 parts of liquid ammonia of a specific gravity of about 870°, and 500 parts of distilled water. Filter. This solution is afterwards diluted with 16 times its volume of distilled water, to which is added, drop by drop, 7 parts of tartaric acid, previously dissolved in 30 parts of water. This is No. 1 solution. The second solution is prepared in precisely the same way, only it must contain double the quantity of tartaric acid. After having cleaned the glass with putty powder mixed with water, by spreading it over the entire surface with a ball of chamois leather, and leaving it to dry for a few minutes, and then rubbing it off with another piece of chamois leather, or a soft linen cloth, this glass is placed on a rack, and an india-rubber roller, moistened with distilled water, passed over it to remove any particles of dust that may adhere to it. After this, it is laid on a metallic table, covered with a waxed or varnished cloth, and heated to about 120°. The plate being in a perfectly horizontal position, the surface is covered with No. 1 solution. The deposit of silver commences in about ten minutes, and is completed in about fifteen minutes afterwards. The glass is then tilted up so as to allow the liquor to run off, and rinsed with water—rather more than lukewarm—to carry away the non-adherent powder; it is then restored to its horizontal position, and covered with solution No. 2. In a quarter of an hour the deposit is completed. The next thing is to wash the plate as before, and dry it; after which it only remains to polish and burnish the film of silver deposited, in order to make it perfectly smooth, and give closeness to the grain."

Received: "Dover Illustrated by Photography," and the *Journal of the Franklin Institute*.

Several Correspondents in our next.

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Photographs Registered.

Moon and Co., Crewe,
Photograph of Rev. R. M. Sharpe.
Mr. T. Ladmore, Hereford,
Two Photographs of Dr. Atley, Bishop of Hereford.
Mr. G. R. Gill, Kentish Town Road,
Photograph of Mr. Howard Johnstone.
Mr. A. Clarke, Stourbridge,
Photograph of Hon. C. G. Lyttelton.
Mr. U. Bradley, Milford,
Photograph H.R.H. the Duke of Edinbro'.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 598.—*February* 18, 1870.

CONTENTS.

PAGE
The Photographic Society of London ... 73
M. Blanquart Evrard's History of Photography ... 74
Photography for Mountain Climbers ... 75
On Errors of Perspective in Portrait Photography. By Dr. H. Vogel ... 76
The Liverpool Dry Plates. By W. J. Stillman ... 78
Mysteries of the Dark Chamber ... 78
Prints and their Production. By S. T. Davenport ... 79
Correspondence.—The Early Use of Iron Development—Comfort in the Glass Room—Magic Lantern Queries—Notes of Experience—Combined Negatives—Combination Negatives and Bifacial Medallions—Splitting Films ... 80
Talk in the Studio ... 83
To Correspondents ... 84

THE PHOTOGRAPHIC SOCIETY OF LONDON.

The report of the council of the Parent Society, as the Photographic Society of London is familiarly styled, is pre-eminently satisfactory and encouraging, recording, as it does, the results of a year of unusual interest and activity in the Society. The papers read have been numerous and instructive, the meetings have been well attended, the exhibition was a great success, and the numbers have been increased during the year by the addition of thirty-one members. Not less important is the fact revealed by the treasurer's report: that the financial position of the Society is improving, and there is every prospect of a speedy liquidation of liabilities which have for years been accumulating, and, to some extent, paralyzing the activity and usefulness of the Society. There was but one way, it was found, in which the expenses of the Society could be efficiently reduced. For some years past a *regime* of rigid economy had been established. Dr. Diamond initiated this by first voluntarily surrendering part of his salary as secretary and editor, and finally giving up the secretary's remuneration altogether, and undertaking the duties honorarily. Next, the inconvenient and expensive apartments at King's College were abandoned, and more comfortable apartments secured in Conduit Street at half the expense. For years, costly exhibitions, permanent rooms, expensive and resultless collodion-testing committees, and similar money-wasting luxuries, which exhausted the accumulated funds of the Society, had been abandoned, and the economies first named had been established; but one heavy drain on the funds of the Society remained: its Journal absorbed something like half the annual income of the Society. Further financial reform, which left this untouched, was impossible. The Society had an unpaid secretary, cheap rooms, no presentation prints; all its expenses were reduced to a minimum; but, so long as the Journal was a constant drain, there appeared little chance of getting out of debt.

A change has at length been resolved upon in regard to the Society's Journal. It is not to be abandoned, but modified. Instead of being issued every month, it will be issued only during the Society's session. This will at once cut off one-third of its cost. Instead of being a monthly journal of photographic literature, it will, in future, be chiefly confined to the transactions of the Society, which, during the months in which it is issued, will reduce its bulk and consequent cost. For some time past it has been held desirable by many that the Journal should be dropped altogether as unnecessary, if not useless. Mr. Peter le Neve Foster, at the annual meeting, held this view, and remarked that as two weekly journals already recorded the transactions of the Society very efficiently, it was unnecessary for the Society to continue the cost of doing it officially. Mr. Glaisher, the president, held—as many others hold with him, and, we think, with much reason—that besides being a loss of dignity to the Society to abandon the record of its proceedings to private enterprise, the entire abolition of the Journal would destroy the only link between the Society and its provincial members. Hence the decision of the council to modify the Journal as we have indicated.

We confess we should have seen with much regret the entire collapse of a journal to which photography and photographers owe much. When it was first issued, it supplied a very pressing want, at a time and in a manner which private enterprize could not possibly have done nearly so efficiently. It became the medium of intercommunication between photographers, and the means of publicity for photographic manufacturers; it acquired a large circulation, and became a source of great profit. The art which it had helped to cradle and foster, however, soon became too big for it; and private enterprize stepped in to supplement it. First one, and then another weekly journal commenced, and the monthly journal was soon left in the rear. This was a twofold necessity: first, because private enterprize, as a rule, manages commercial matters much better than corporate bodies or societies; and, second, because a monthly journal had little chance of success in competing with weekly journals. In matters of intelligence it could only give a *réchauffé* of that which had been issued and devoured in the weekly journals. In matters of discussion, or affording specific information, a monthly interval between the issue of each number was destructive of interest. The chief thing upon which it could rely for a special character might have been original articles, and these, unless the expression of many minds, capable thinkers, and skilled workers, rarely possess much interest for the mass of practical photographers. Certain it is that the Journal of the Photographic Society, either under the hands of Dr. Diamond or Mr. Spiller, aided by many valuable contributors, has, not from any imperfection of its own, but from the force of the circumstances named, failed to maintain its interest in competition with weekly journals; its circulation has fallen off; and, from being a valuable and highly remunerative property, it has become for years past a serious burden upon the funds of the Society. An energetic financial committee, having carefully examined the affairs of the Society, have come to the conclusion that a stern economy in this matter presents the only chance of retrieving the financial position of the Society. Hence the decision we have noted.

The amount of the Society's liabilities is not now large, having been reduced, by payments and other means, during the year. In last year's balance-sheet a sum of £112 10s. appeared as due to the late editor, Dr. Diamond. No such item appears in the present year's accounts; we should have been glad to see, however, an intimation, in the accounts, of the fact that between £40 and £50 of the amount due to Dr. Diamond was remitted by him for the advantage of the Society. The stock of the Journal, which has for some years past been valued at £100—representing, really, a few hundreds of pounds' worth of Journals—is, in the present balance-sheet, entered at its value as waste paper simply; not in the belief, of course, that this is its actual value, or its commercial value, but as representing the sum which could be commanded at any moment for so many pounds of old paper, the aim of the council being to present a bare, unsophisticated account of the state of the funds. Had this item been estimated as on former occasions, a good balance in favour of the Society, instead of a deficit, would have been presented.

One of the most valuable elements in resuscitating the Society is, we are satisfied, its exhibition. The old costly system of managing the exhibition was, of necessity, abandoned. The new and economical system initiated three years ago has proved quite as efficient, and is, we feel assured, of vital importance to the stability of the Society and the progress of the art. The sale of catalogues on the last occasion produced a sum which will, we believe, cover all expenses of the exhibition. This feature of the Society will, of course, be maintained and improved; and, with an energetic president, an earnest council and officers, we believe that the Society will ere long be in as sound a position, and as successful in all respects, as in its most palmy days.

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M. BLANQUART EVRARD'S HISTORY OF PHOTOGRAPHY.*

As we have said in a preceding article upon M. Blanquart Evrard's work, we have a formal claim made by the author for M. Bayard as the first inventor who succeeded in fixing the previously fleeting image of the camera-obscura upon paper, and this not by the intervention of a negative or intermediate process, but by the direct action of the sun's rays.

"It was," says M. Blanquart, "in 1839, six months before the publication of M. Talbot, that M. Bayard showed to M. Desprez, member of the Institute, and two months later to MM. Biot and Arago, his photographic proofs obtained directly in the camera. On the 24th of June of the same year, in a public exhibition made on behalf of the victims of the earthquake at Martinique, he exposed a frame containing thirty specimens of his proofs. Unfortunately, he did not communicate his process, and a few days afterwards Daguerre appeared, making public his discovery and his method. The emotion was general, and, in spite of the report of M. Raoul Rochette to the Academy, inserted in the *Moniteur* of the 13th November, 1839, M. Bayard remained in the shade, and his invention, which has never been practically adopted, was almost entirely ignored."

M. Blanquart says that he has in his possession, and has shown to the Soc. Photographique of Lille, several proofs, by M. Bayard, of admirable sharpness and delicacy (*finesse*), and he gives the following method of obtaining them, communicated by M. Bayard himself:—

1. Soak the paper for five minutes in a solution of sal ammoniac at two per cent. (ten grains to the ounce troy, very nearly). Dry the paper.

2. Float on a bath of nitrate of silver at ten per cent. for five minutes, and dry in the dark. (Fifty grains to ounce troy.)

3. Expose the silvered side of the paper to the sun till a full black is obtained, taking care not to push the action up to the bronze hue; wash the exposed paper in several waters, dry, and keep it in a portfolio for use.

4. Soak the paper for two minutes in solution of iodide of potassium at four per cent. (twenty grains to ounce), apply the white side of the paper upon a smooth slate, very flat and coarsely ground, well wetted with a solution of the iodide; expose immediately in the camera. The light will bleach the paper in proportion to its intensity.

5. Wash the proof in several waters, then in a bath composed of one part of water and one of sal ammoniac (strength not stated); again wash in water, and dry.

By placing a ground glass before the lens, and looking into the camera through an aperture made for that purpose in front, the degree of exposure may be seen.

These proofs may be strengthened by means of pyrogallic in the ordinary way, in which case they are fixed in hyposulphite of soda.

Our readers will admit, we think, that we have here a highly interesting process, but not by any means new in this country, since the chemical reactions involved are precisely those which were the subject of research to four of our early labourers on photogenic action, as actinism used to be called, all of whom discovered this remarkable action of the iodides upon reduced silver, or sub-chloride of silver, about the same time. We allude to the experiments of Fox Talbot, Sir John Herschel, and Drs. Fife and Hunt, the results of which are given in the excellent manual published by the latter gentleman, 3rd Edit., p. 88. The testimony of M. Blanquart to the sharpness of the proof obtained in the camera proves that good work may be done by this process, which well deserves further investigation.

After curtly alluding to the Daguerreotype, M. Blanquart passes on to Talbot's "precious" discovery of the paper process, and discusses the share he himself had in popularizing its use in France. Accused by Louis Figuier of having communicated his process to the French Academy without reference to the labours of his great predecessor, Fox Talbot, he shows that the interests of that gentleman were not neglected, but duly considered in the report, and that, so far from ignoring his predecessor, he chose the same channel for his communication as Fox Talbot, viz., Francois Arago. We cannot but think that the French Academicians were on this, as on former occasions, too partial judges. A most flattering report was made upon M. Blanquart's communication, yet it was admitted that the process did not "sensibly differ" from that of Fox Talbot communicated six years previously, neither in the "nature of the substances nor in their properties," but in the "manipulations only." Nor did the results differ materially, except in the case of the portraits, and this may have arisen from the superiority of the optical instruments employed.

From the history of photography on paper, including the history of the circumstances under which he founded his printing establishment at Lille, and the discussions into which it led him, M. Blanquart passes on to the attempts to engrave the photographic image on a plate, commencing with Nicephore Niepce, and, in 1852, thirty years later, to the researches of Barreswill, Davanne, Lerebours, and Lemercier. He gives the interesting process of Davanne, identical with that patented in this country by Mr. R. Macpherson, of Rome, and by which proofs on stone in half-tint were obtained equal or superior to any which have been since produced in this direction. We allude to that in which a solution of bitumen of Judea is dissolved in ether. The stone was covered with this solution, and the granular pellicle of bitumen acted on by light. The picture was developed by washing away the soluble bitumen unacted upon by ether, and the picture etched and worked up. We then have the improvements of Niepce de St. Victor, the process of Talbot, and that of Baldus and Nègre, the latter still using bitumen as the basis of their process.

M. Blanquart considers M. Poitevin to have been the first to introduce a really practicable process for obtaining photographic gradation on stone. His patent was purchased by M. Lemercier, of Paris, a very eminent lithographer, who works the process to this day. M. Blanquart gives in his work one of seven hundred impressions from one stone, supplied by Lemercier, the subject a bas-relief, which is an excellent result, being full of half-tone and of delicate texture, although greatly inferior in this respect to the productions of Albert with which we have lately become familiar. Why has not Poitevin's process, which is public property in this country, been utilized by our lithographers?

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* Continued from p. 41.

M. Blanquart gives in succession the different attempts to engrave a plate, with all of which our readers are familiar from the report of M. Davanne in awarding the Duke of Luynes' prize.

After reviewing the results of all these processes, and giving numerous specimens, M. Blanquart sums up and gives his judgment, in which we cordially concur:—

1. That subjects in line and stipple may be satisfactorily rendered, even on a reduced scale, by these processes.

2. That subjects from nature, while highly interesting and astonishing as a scientific result, leave much to be desired from the artistic point of view.

The work of M. Blanquart concludes with a section on carbon printing, including Woodbury's process, photography on enamel, and photography in natural colours. The former is singularly meagre, and, we must say, incomplete and incorrect; and, considering the importance of the subject, we shall devote another notice to this part of the subject.

PHOTOGRAPHY FOR MOUNTAIN CLIMBERS.

But a very small proportion of those who use the camera, either for pleasure or profit, have occasion or desire to transport their photographic equipments to the high Alps, or to manipulate amid the peaks and passes of almost inaccessible mountain scenery. There is, nevertheless, always a certain amount of interest of a suggestive kind in narratives of such effort, and in descriptions of the apparatus used by adventurous mountaineers who avail themselves of photography to give value to their reminiscences of such rambles. About four years ago the Rev. H. B. George, a member of the Alpine Club, and editor of its Journal, issued an interesting volume describing an exploration of the overland and its glaciers with ice-axe and camera, and in that volume Mr. Ernest Edwards, who had charge of the photographic operations of the exploring expedition, gave us an account of his photographic equipment, which had been reduced to the most portable limits consistent with efficiency. Mr. George, who has just published, in the *Alpine Journal*, details of the photographic operations during another ramble, says that Mr. Edwards' equipment, although considered a marvel of portability and neat adaptation, was a heavy load for the stoutest Oberland porter, and hence formed a serious impediment to the tourist desiring to ramble at his own sweet will. Mr. Edwards, however, worked the wet process, and Mr. George now works with dry plates. The equipment of 1865 weighed, exclusive of camera and stand, seventeen pounds; that of Mr. George, in 1869, including everything but the stand, which formed part of his ice-axe, weighed under four pounds, scarcely a serious addition to the impedimenta of the most difficult climbing.

Mr. George used the Liverpool dry plates, of which he speaks in high terms, some of his most successful pictures having been taken on plates a year old, and developed two months after exposure. Of the great advantages of dry plates in Alpine photography he speaks in warm terms, not only for their convenience, but because the absence of water above the snow line renders the wet process impracticable in the high Alps. It will be readily understood that with an equipment so light and portable, very small plates were employed, the negatives having been taken with an express view to subsequent enlargement. Although the pictures thus obtained are not quite so perfect as those taken on large plates direct, they are, as Mr. George observes, much better than nothing, and can be obtained "wherever a tripod can be made to stand—at any place a mountaineer can reach—for a very slight expenditure of time and trouble." The equipment is thus described:—

The camera is a cube of about three and a-half inches, and the ordinary landscape lens fits inside it when the apparatus is packed up. The dark slide in which the plates are carried contains two plates back to back, on each of which two pictures can be taken. My own experience is that two such slides, or eight pictures, are amply sufficient for a day's work; but on this point every one must judge for himself. A bit of black velvet to cover the camera while a picture is being taken is the only other thing necessary to be carried during the day, for the store-box of plates, out of which the slides are filled at night, and into which they are returned after use, will, of course, remain in the traveller's portmanteau. Mountaineers, however, who are apt to part with their portmanteau for several days at a time, will find it convenient to have a small store-box to hold about a dozen plates, which they can carry with them. I had one made of zinc, as light as, and more compact than, a wooden box, in spite of remonstrances from the manufacturer, who thought that metallic dust would be scraped off in putting the plates in and out, and would injure the pictures; and certainly I found nothing of the kind happen. Such a box, when full, weighs some eighteen ounces, and furnishes, with the two dark slides, an ample provision of plates for several days; it cannot be exhausted under four days, and will, on the average, suffice for a week. The camera, slides, and zinc box I carried in a square leather case (measuring seven and a-half inches by four inches by seven and a-half inches) without quite filling it; in fact, there is room in the case for the extra luxuries which I have yet to describe. The first of these is a second lens, with which pictures can be taken instantaneously if necessary. The ordinary lens is certainly better for landscape purposes, but is useless for portraits, and not perfectly adapted for buildings. Moreover, one often sees cloud effects, for instance, which it is hopeless to attempt to record on a plate that requires four minutes of exposure, but which might well be pictured if a few seconds would suffice. When on the summit of the Gross Venediger, I found myself in sunshine surrounded by a ring of the most wonderful cloud-masses, whose beauty, to my mind, compensated for their concealing the vast panorama. Pictures of them would have been absolutely unique, worth any trouble that might be needed for obtaining them; but I had no second lens with me, and I vowed then and there that I would never again go mountaineering without one. The second additional luxury is an invention of my own, suggested by the desire I felt at several points of view to obtain something like a panorama; more, at any rate, than could be included in one picture. To do so I had to shift my camera-stand, and it is manifestly impossible, especially on a rocky mountain top, to get exactly the same level again. Accordingly I invented a little device, to be inserted between the stand and the camera: a cone turning in a socket, which can be fixed in any position by means of a set screw, and, when the screw is loosened, can be turned quite smoothly. The edge of the socket is graduated, so that it is unnecessary to displace the dark slide in order to look at the second picture through the camera; one can always ensure the second view fitting on to the first. This contrivance has the further merit of enabling one to set up one's camera without troubling about the direction in which the view is going to be taken, since the camera can be readily pointed afterwards; no insignificant advantage on a pile of loose rocks at the top of a mountain, where it is hard to get one's tripod to stand at all. The third extra is a little plate with a groove along it, by which, if desired, a pair of stereoscopic pictures may be taken, by placing the camera first at one end of the groove and then at the other. It is for each traveller to judge for himself whether he cares to have all or any of these appendages to the camera. No one need be deterred by the weight, for the case containing all that I have described—camera, two slides full, zinc box full, extra lens, and the other fittings—weighs but five and a-half pounds.

It remains to describe the stand with which this miniature camera is used; and this is the point at once of most importance to the mountaineer, and on which I can, from my own experience, speak most decidedly.

In 1868 I used, with a camera of slightly different (and, I think, inferior) make, an ordinary wooden tripod, the legs being so shaped as to form segments of a solid pole, and being held together with a brass ring. Such a composite pole may, to a certain extent, take the place of an ordinary alpenstock, but is not the sort of instrument one would like to carry for a serious mountain expedition. Moreover, most climbers like an axe, and it becomes a real encumbrance to drag about a second pole of any sort. The practical result to me in 1868 was that I several times left my camera behind when going up a mountain. Accordingly, I set about devising something more portable, and, after one or two not altogether successful attempts, hit on the plan of making my axe itself the stand. . . . A saddle-shaped clamp screws into the bottom of the camera, and is placed across the head of the axe, being fixed there with a set screw. The axe stand upright, and is steadied by a small brass tripod, the top of which, instead of being a solid plate, is a ring fitting loosely round the handle of the axe, and capable of being firmly clasped round it by means of a screw. I consider it an absolute *sine qua non* that the tripod shall not be in any way attached to the axe, so that, when desirable, either may be used separately. When the axe has to be turned to its special work of step-cutting, the tripod will necessarily be an encumbrance; but it is better carried loose than in its place on

> the axe, spoiling its balance, and getting its own screws bent and broken. And the tripod is very convenient without the axe, the clamp being placed across the ring which forms its head There are many places, especially on rocks, where it would be difficult to set up an upright pole surrounded by the tripod, but where the three legs may always be made to stand firm. It is obvious that this tripod—weighing, as it does, two pounds or more—is a serious addition to the weight of an axe. All I maintain is, that, it being necessary to have a camera-stand, this is the easiest mode of carrying it. . . . But the best evidence in its favour is from practice. I carried my axe, with the tripod on it, throughout every mountain excursion I made in 1869, and I fully intend doing so on every future expedition. For the photographic success of this stand I need only say that not one of my pictures was injured by any want of steadiness, and this although they were taken in all sorts of places, often much exposed to wind. It is hardly necessary to add that it will suit an alpenstock equally well, provided it has a flat knob at the top over which the clamp may be fixed.

Mr. George, in describing his operations throughout, supposes the traveller to have no precise or technical knowledge of photography, and that the majority of those to whom his remarks are especially addressed will simply buy and expose their plates, and afterwards send them to a professional photographer for development. The question of exposure then becomes a consideration of importance, and he lays down certain rules for the guidance of such, premising, however, that it is safer to learn to develop the plates in the evening, as a guide to next day's exposures. He says:—

> The apparatus required for developing is not bulky, and the process is both easily learned, and requires less practice and skill in manipulation, than preparing a plate by the ordinary wet process. Any one willing to develop his own plates in the evenings would find the materials no encumbrance worth considering.

For those disinclined to take this trouble, the rules laid down, and a certain amount of "instinct," are supposed to be moderately good guides. We fear that this instinct, which photographers are often conscious of, is, after all, the unconscious operation of experience, which will necessarily fail the non-photographer. We have occasionally seen dry-plate workers, after uncapping the lens, light a cigar, and recline on a bank in meditation, or take a stroll. When one has been asked how long they were going to give a certain plate, he would glance round, estimating the light and scenery, and simply answer, "I scarcely know: until I *feel* it has had enough." The feeling in such case is but a subtle and scarcely recognized result of experience, of which a non-photographer could know nothing. Mr. George says:—

> The rules are tolerably simple in outline, though it is as impossible to reduce them to a formula as to give precise instructions by which to make a picture artistically excellent. The operator must determine the exact time required for each separate picture by his own instinct, just as he determines exactly what shall be included in it. The general principle is, that the greater the amount of light received on the lens the more rapidly will the picture be printed. That is to say—
>
> 1. A distant view requires less time than a near object.
> 2. An object light in itself, or brilliantly illuminated by the sun, requires less time than a dark object.
> 3. The amount of light varies considerably with the time of day and the amount of cloud in the sky.
>
> The first rule is but a particular case of the second, as students of Ruskin are well aware. I need only refer to the paragraphs in his volume on "Mountain Beauty,"* in which he demonstrates the extraordinary lightness of very distant objects, such as mountains a few miles off; but the whole chapter is worth attention for the purpose of judging of the exposure required for a photograph. I have also found that, as a matter of fact, as one goes higher the time necessary for a picture tends to diminish. To take extreme cases from my own experience: a view from the top of a pass 10,400 feet high, of a mountain a mile or so distant, taken at 9 a.m., in bright sunlight, with a snow foreground, was a trifle over-exposed in two minutes; and a plate exposed on the summit of the Antelao at noon on a cloudless day was burnt up altogether in two and a-half minutes. On the other hand, for a picture taken in the gorge of Sottoguda at 9 on a dull morning, four and a-half minutes proved barely sufficient; and the same exposure at 5.30 on a dull evening in the Ampezzo valley failed to produce any picture at all, though the view was a very distant one.
>
> There is no avoiding the ever-present difficulty that near and far objects—foreground and background—require, for perfection, different exposures. All we can do is to assimilate them as nearly as possible. If there is a great distance to be taken, choose a brightly-illuminated foreground; on a mountain-top, for instance, prefer snow to rocks. Disturb the snow a little, if possible, to break its uniform surface; but rocks will not print themselves distinctly till the distance is burned. Similarly, it is impossible to obtain a satisfactory photograph of what is to the eye most attractive—a mountain view framed in the branches of some closely overhanging tree; one must be sacrificed to the other. The scale ranges from a minute and a-half (on snow, under a bright sun, for a very distant view—such, for instance, as one from the summit of Mont Blanc) to five minutes, or occasionally even more, for a deep ravine on a dull day, or a dark object very near at hand. In an open valley, with no very extreme distance (for instance, in the valley of Grindelwald) the limits would be three and a-half minutes if clear and near midday, to four and a-half minutes if either early or late.
>
> With regard to the time of day, it may be stated generally that morning is better than afternoon. The best hours are from 9 to 2; but, with longer exposure, one may get pictures at hours considerably before and after these. I got a very fair picture at 7 a.m. on August 14, and several at 4.30 or 5 p.m. But all rules resolve themselves into one. Judge for yourself how much light there is on the lens, and expose a proportionate time between the sort of limits that have been indicated. The only supplementary advice I can give is, when you are in doubt expose a little more; for if a plate is under-exposed the picture is not there, and cannot be got at; if it is over-exposed the picture is there, though more or less discoloured and burnt, and a little management in developing will correct much of this.

The author concludes by recommending a little practice at home with the miniature camera before taking it to the Alps, and commends the tyro to Mr. Murray, of Murray and Heath, for practical advice in commencing his operations.

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* *Modern Painters*, vol. iv., page 39, &c.

ON ERRORS OF PERSPECTIVE IN PORTRAIT PHOTOGRAPHY.

BY DR. H. VOGEL.

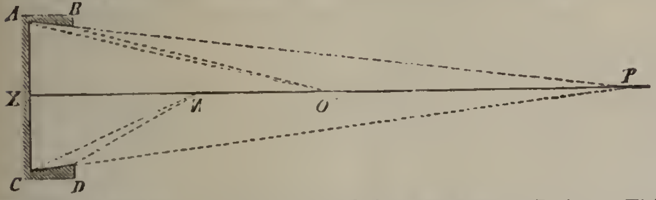
One of the earliest facts acquired by practisers of photographic portraiture was to the effect that hands, feet, or other extremities, when thrust forward in front of the body, are apt to be exaggerated and enlarged, especially if photographed from a short distance. Even the public generally are acquainted with this phenomenon, and there are, indeed, some people who, notwithstanding the photographer's affirmation to the contrary, believe that the forehead will appear greater if the head is bowed forward in the direction of the apparatus.

There are, however, many errors of perspective besides those just mentioned, which, instead of occurring in portions of the model nearest the lens, are seen in parts most remote from it; these strange abnormities, which have frequently been ascribed to faulty instruments, are observed even with the most correct lenses, and when the apparatus and model have been arranged with care and accuracy.

A short time since two portraits of a young lady, bust pictures of carte-de-visite size, and taken full face, were shown to me, which had been produced on one and the same day by a photographer of repute, and which had, nevertheless, a curiously different appearance. In one of the pictures the face appeared broad, and almost chubby, while in the other it was long and narrow. The difference was remarkable, and attracted the attention of the fair photographee herself, its cause being the subject of much discussion. Many attributed the phenomenon to difference in lighting; but inasmuch as the actual proportion between the breadth and height of the face was, in one case, smaller than in another, this could not be accepted as a valid reason; in the thin face the proportions were represented by the figures 100 : 114, in the broad face 100 : 110. Others, again, were of opinion that the two pictures had been taken with different lenses, and that a short focus instrument had yielded the broad-faced portrait.

The interest in the subject caused me to devote a little time to its study, and I will here, by means of a simple diagram, demonstrate the matter in a comprehensive manner, so that the solution of the riddle will be at once apparent.

A B C D is a section of a quadrangular body, a pillar with sloping sides, to be observed with the same eye from two different points of view, O and P. Both points are in precisely the same direction, lying one behind the other, and yet the aspect from the two is very different. The line of view in O runs along the sloping sides of the object, and they thus appear foreshortened, and are marked only with a line, the surface of the sides not being apparent. It is different, however, at P, which is twice the distance of O from the object, for in this instance the surface of the sides is perfectly distinct.

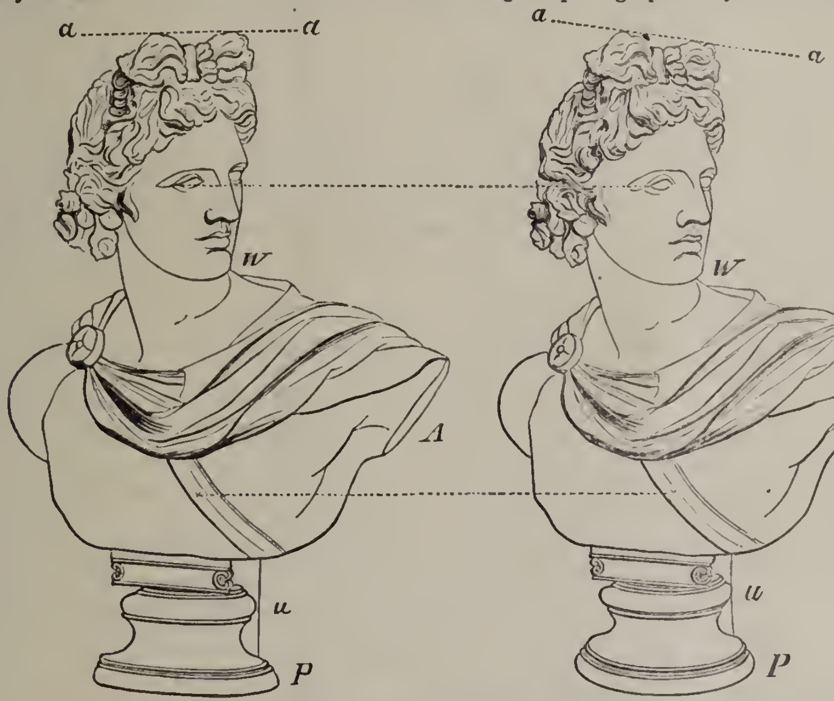


The same appearance would naturally be given to an object in a camera as here seen by the eye; if the pillar is photographed from O, nothing is seen of the sides; but if taken from P, the sides are seen, and the picture appears proportionately broader.

Now let us suppose a human head in place of the object A B C D, the side surfaces being the cheeks of the model, and it is then easy to understand that by placing the camera near to, or far away from, the sitter, results similar to those above described may be produced. From a near point of view a portion of the cheek at the side is invisible, and the face appears narrower; while in a photograph taken from a distance, the whole of the cheek is seen, and the face therefore seems broader.

If now I take, by means of two apparatus, the one of short and the other of long focus, placed in exactly the same relative positions, but at different distances from the object, two portraits of the same size, the one which has been produced at a short distance will appear narrower than that taken further off.

This conclusion stands in such apparent contradiction to the fact that short focus lenses easily produce enlarged feet and hands, that I have deemed it expedient to verify the statement by means of an illustration which I here append. It represents two photographic reproductions of the head of Apollo transferred to wood by the photoxylographic method, in order to afford as correct a representation as possible; although by no means conveying so good an idea as the original photographs, they will doubtless prove sufficient to an attentive observer. Prominent hands and feet do not exist in the bust, which were placed, together with the apparatus, in a perfectly upright position, the line of direction having first been carefully determined. The first, fig. 1, was taken by means of a small Dallmeyer lens at a distance of forty-seven inches, and fig. 2 with a Steinheil lens at a distance of one hundred and twelve inches. The difference in the appearance of the two pictures will be at once remarked. In fig. 1 the face appears narrower and thinner, and the breast almost weakly, while fig. 2 is more full-faced and stouter. That this difference is not mere imagination may be proved by measurement.*



The distances between the eyes and the cross marked upon the breast are in both pictures the same; the greatest breadth of chest (including the arm) amounts, however, in fig. 1 to fifty-six millimetres, and in fig. 2 to fifty-nine millimetres. Besides these actual differences of measurement, the contrast in the character of the two heads is very marked, and sufficiently justifies the title I have placed at the heading of this paper. Let a line be drawn, *a a*, at the summit of the figures; in fig. 2 it will be horizontal, while in fig. 1 it inclines towards the left. The pedestal, P, likewise exhibits something worthy of attention; its rings in fig. 1 form strongly curved ellipses, while in fig. 2 these are more open.

Again, the arm-piece, A A. In fig. 1, nothing scarcely is seen of the surface of the side, while in fig. 2 the side-surface is very apparent. In the same way the back of the pedestal, *u*, is more prominent in fig. 2 than in fig. 1. The head in fig. 2 rests more between the shoulders (see the angle of neck at W), while in fig. 1 it is more raised; for this reason, in fig. 1, the head appears to be held higher. Fig. 2 conveys the impression of the head having been inclined forwards, and yet the figures were kept perfectly steady, the lenses were free from error, the direction and height were the same in both instances, and nothing, in fact, was different but the distance.

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* In the original photographs of the white busts with a black background the difference was much more glaring.

(To be continued.)

THE LIVERPOOL DRY PLATES.

BY W. J. STILLMAN.

Having during the past year experimented pretty thoroughly with the Liverpool plates, I think it in the interest of the profession, as well as of amateurs, to send you the results.

I ordered in June last several dozen plates, seven and a quarter by four and a half, sent me at Athens. On their arriving I opened about three dozen, and stored them in a common deal plate-box carefully protected against light, but in no way against air, and in no other way against damp than by carrying them in my portmanteau. I exposed a number in Athens, in the country round about, and in the islands, and brought the others by way of the Mediterranean to Marseilles, six plates being in the slides, of which four were exposed in England in November, and the other two in America in December. I exposed the last of those opened in July (or thereabout) at Boston in the latter part of December, they having never had any protection from the long sea-voyage other than the deal plate-box (in which they were stowed back to back).

Five of them were exposed at a temperature approaching zero, many in an Athenian August; some travelled nearly five thousand miles, mostly by sea, and were kept out of the package exposed to the air five months, and I found that the last exposed of these were as sensitive and free from defects as the first. The snow scenes which I accompany this with were taken on a hazy day, with scarcely any sun, the thermometer at sunrise being [illegible]° below zero, and in the five taken that morning there is not one stain, not the least fog, and only two pinholes in the five.

There was no perceptible difference in the development or sensitiveness, and I consider my experiment so completely satisfactory that I would not hesitate to take a supply of these plates for a three years' voyage in all climates, and *go independent of wet collodion*, so far as landscapes are concerned.

My chief cause of failure in the use of them has been from too short exposure. I have found it difficult to avoid fog with the rule of three exposures of wet collodion, and have always given six if possible, but I have often given ten or twelve without any injury to the lights. I exposed one plate, with the four aperture of Dallmeyer wide angle rectilinear, twenty minutes (twenty to forty seconds with wet collodion), and found the highest lights (sunlight on white marble) *not solarized*. One of the snow scenes was exposed four minutes with three aperture rapid rectilinear, another on the same view eight minutes, and both made good negatives, as you can judge. It is, in fact, difficult to expose them so long that by a judicious development they may not be well brought out.

To secure this I have modified the development from that directed. I commence with pyrogallic acid alone, three or four grains to the ounce of water (the preliminary alcohol being *indispensable*), and let the film get thoroughly saturated with it. If at this stage any sign of image appears, I drop one drop of dilute ammonia (five per cent.) into the developing glass, and pour the pyrogallic back into it: returning, I leave it on till the detail begins to appear in the shadows, when I drop in four to eight drops of ammonia, and one drop of bromide of potassium (five grains to the ounce), and continue. If the shadows show any sign of fog, I immediately add six to eight drops of bromide, and then drop in ammonia drop by drop till I get the required intensity. If, on the other hand, no image appears from the pyrogallic, I drop in ammonia, drop by drop, at intervals of ten or fifteen seconds, until all the details appear, without any necessity of adding bromide; but if, when all detail is out, there is not sufficient intensity, I add the ammonia and bromide solution in equal quantities.

In this way I have given four minutes of the full opening of the rapid rectilinear without fog or over-exposure. The sky develops more equally than when ammonia is added from the beginning, and there is much less liability of stains of any kind; and I have *perfect* command of the development, be the exposure excessive or in minimum. If too short, there is no escape from fog, for the unimpressed film *will* take the silver.

I find an immense improvement in the preparation of the plates since my former trials, but there are still two faults resulting in spots of different kinds. The presence in the film of particles of bromide of silver which have not sufficiently deposed is much less frequent than formerly, but still occurs; but I have discovered a cause of spots much more serious than any other I know in dry collodion: in the presence of particles of dust resting on the film, and not adhering to it. This causes spots, which increase and produce a centre of insensibility with a circle of partial insensibility; and when two plates are packed face to face, not in contact by a perceptible distance, the particles of dust on one plate are reproduced, by a kind of chemical reverberation, on the opposite sensitive surface, spot for spot. Greater care should be taken in packing them to keep them free from dust. I find it well to unpack them and stow them away in a plate-box in a dry place (back to back) for a month before using them, dusting them carefully before boxing them. This gives the film time to regain its sensitiveness; and, with plates so treated, I have scarcely ever spots of this kind.

Can any experimenter, or Mr. Mawdsley, give any means for reducing the intensity of the bromide negative? Its colour is so deceptive that I have, in an unusually weak developing light, often made the negative so intense as to be practically useless, and I have found no way of reducing without producing inequalities.

MYSTERIES OF THE DARK CHAMBER.*

A number of our readers have expressed a desire for the working formulæ of some of the eminent operators in New York, maintaining that they must have some "secrets" which are not made public.

These requests, then, are our apology for what follows. They are no secrets, and have never been held as such. The gentlemen whose names they bear are nearly all members of the National Photo. Association, and are too old in the business to be guilty of holding what they know as "secrets." They have too often enjoyed the benefits of inter-communication, and met our request for their secrets with a disclosure of all we asked, and we give them to our readers without extra charge.

Forbes's Formula for Negatives.

Mr. J. L. Forbes, of Gurney's Gallery, says: "I have no secrets in my dark room, and I am willing to let the craft know how I am working; and that is, the simplest way I can, without raising any dust:—

Collodion.

Ether and alcohol	Equal parts
Iodide of ammonium	5 grains
Bromide of ammonium	1¼ ,,
Bromide of cadmium or potassium	1¼ ,,
Cotton	4½ to 6 grains

I find that this mixture works well, winter and summer alike. Sometimes I work ammonium and cadmium alone (five grains of iodide to two and a-half grains of bromide), and mix together some of both, and have found them to work well. I never let my bath get below forty grains, and I keep my room warm night and day. In developing I use plain proto-sulphate of iron, twenty to twenty-five grains to the ounce of water; sometimes I have to use less, according to the subject and the style of dress the parties have on. To make good work you have to make every sitting a study."

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* *Philadelphia Photographer.*

Mr. Forbes is one of the most talented manipulators in this country. We have seen many of his negatives, and they are a wonder, a study, and a delight, having all the good qualities of perfect negatives.

KRUSE'S AMMONIA NITRATE PRINTING PROCESS FOR PLAIN PAPER.

Mr. E. Kruse, of Bogardus's Gallery, says: "My process, of course, is only used for copies and plain prints. It is, doubtless, the same as that used by all others. I have no 'secrets.' I find it good, and, such as it is, I give it unto you.

"I prefer the Steinbach paper to all others, for its regular quality. It is easily salted, and is not injured by washing.

Salting Solution.

Chloride of amm. ... ... 60 grains
Water ... ... 1 quart

I salt two sheets at once. Placing them back to back, I sweep them through the solution three times, and then immerse them one minute. I then hang them up to dry, distinctly marking the salted side, to guide me in silvering. Care should be taken, in salting, that the right side of the paper be outward.

Sensitizing Solution.

Nitrate of silver ... ... 1 ounce
Water ... ... 8 ounces

From this pour off one-fourth (or two ounces), and to the remainder add six ounces of liquor ammonia, drop by drop, rapidly stirring with a glass rod all the while. The solution will at first turn brown, but, after stirring, will clear up again. Now add the two ounces separated to the other, and filter.*

"The solution is now ready for use. Pour a sufficient quantity of solution on the sheet of paper, and spread it uniformly over the whole with a pad. The pad I use is made by winding prepared cotton around a bottle with the bottom knocked out. When spreading the silver on the paper, rub gently, and as little as possible, yet have a care that the whole surface of the sheet has attention.

Toning and Fixing the Prints.

Hyposulphite of soda ... ... 8 ounces
Chloride of silver ... ... 60 grains
Chloride of gold ... ... 15 grains
Water ... ... 1 quart

Immerse the prints without washing ten minutes, or until they are properly fixed and toned. Finally, wash the same as albumen prints are washed."

Mr. Kruse is one of Mr. Bogardus's most devoted helpers, and for over ten years has given his energies to plain-paper printing. His counsel, then, comes as from one who knows how to teach.

S. P. VAN LOAN'S PROCESS FOR ALBUMENIZING PORCELAIN GLASS.

Mr. Van Loan, of Bogardus's Gallery, says: "Having given much attention to the making of porcelain pictures for the past three or four years, and finding at the start that I had but little given me to work from that was reliable, the various receipts then known and published not giving permanent or satisfactory prints, I left the beaten track, and entered into a series of experiments to endeavour to get a perfectly reliable collodio-chloride, or, to be more plain, a solution in which alcohol and ether would be made to hold a given quantity of silver without precipitation or decomposition. The task has been a hard one: defeats often. But, not to be baffled, I persevered, and perfect success followed. I have solutions of collodio-chloride months old, and no precipitation of silver can be seen, the solution working as perfectly as when first made. I do not intend to give this part of the process to the fraternity at present, as I think I ought to have some return for the time and trouble spent in its discovery.

"The preparation of the albumen and the coating of the glass for the chloride I give below, and unless this part of the work is done in a thorough manner, no success can be expected, for this is the ground of the work.

Albumen for the First Coating.

"I take the whites of eight fresh eggs (stale eggs will not do), hold them up to the light, and remove all bits of the germ and other foreign matter. I use an eight-ounce graduate to break the eggs in, and as each white is about equal to an ounce, I have about eight ounces of albumen. I now dissolve twelve grains of clear table-salt in one ounce of water, and add to the albumen. I now beat in a dish until the froth is so stiff I can overturn the dish without spilling any of the albumen. I then set it aside over-night to settle, and in the morning pour off the clear part into a graduate, and again allow it to settle. I draw a piece of tissue-paper over the surface always before using, to remove dust, bubbles, &c.

"To clean my porcelain plates I use rotten-stone, water, and a cotton pad. While the plates are still wet (though drained) from the washing, I pour the albumen from one corner, taking care to have it flow evenly, and to avoid bubbles. Pour the excess into a bottle to throw away, and never pour it back into the stock-bottle. Stand the glasses on nails to dry on the edges, and not on the corners. The longer the plates are albumenized before using, the less liable are they to blister on the surface when fixing; therefore it is best to albumenize a good lot ahead. I now coat with my collodio-chloride, and, when they are perfectly dry, fume them from five to fifteen minutes according to the weather. Print a little stronger than paper prints, and wash well before toning. Any weak toning process will do. Tone until slightly blue by transmitted light, and wash well before fixing. Be sure the toning bath is not in the least acid. The hypo bath must be weak, and contain one-quarter salt. Leave the plates in long enough only to get the colour you like, then remove, wash well, and dry.

"In using ground-glass the albumen may be reduced in strength one-half with water, but add the salt one and a half grains to each ounce in bulk. After printing, wash under running water full fifteen minutes, to get rid of the free nitrate of silver left in the pores of the glass, and then tone and fix as usual.

"Many have been troubled with ground porcelain turning dark in the light after finishing, but thorough washing, as above directed, before toning, will end all the trouble in this direction."

PRINTS AND THEIR PRODUCTION.

BY S. T. DAVENPORT.*

IN December 1852 the Society of Arts brought together and exhibited the first collection of photographic prints, the result of French, German, and English skill; and, though but little progress had then been made in the art, it had, even at that date, been proposed to transfer the images obtained to the surface of wood blocks. "But," said Mr. Roger Fenton, in his address at the opening of the exhibition, "before sun-pictures can be extensively used in the production of letter-press, some method of copying them must be discovered which will produce as good or better results than the present one, which shall be so simple in its manipulation that a workman of ordinary intelligence may be trusted to perform it, and which shall not depend upon the state of the weather for its success."

To promote a more systematic inquiry into the capabilities of the photographic art, and to aid its application to commerce and industry, the Photographic Society of London was then formed. How far the art has been advanced, and the requirements set forth by Mr. Roger Fenton fulfilled, it will now be my object to point out.

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* The same filter may be used repeatedly until worn through.

* Continued from p. [illegible].

In 1853 a discussion took place at the Paris Academy, between MM. Arago, Biot, and Chevreul, as to the respective rights of Mr. Talbot, of London, and M. Niepce de St. Victor, to be considered the inventors of the art of photographic engraving on plates of steel. To attain that object Mr. Talbot had used a mixture of gelatine and bichromate of potash, which, it is stated, was modified and browned on the immediate contact of light, and only where the light acted, whilst the part covered by the object to be copied remained unchanged, and could always be removed by water. M. Niepce had aimed at perfecting the process his uncle, the inventor of heliography, described in 1827. The sensitive substance used by him was a solution of bitumen of Judea in oil of lavender. Applied as a layer, this varnish changed its properties while under the action of light. "The parts exposed to the sun became insoluble in a mixture of essence of lavender and oil of petroleum, so that they could be easily separated from the soluble part not impressed, and which represented the image to be reproduced." The liquid used by Mr. Talbot for biting in on steel was bichloride of platinum; that employed by M. Niepce was a mixture made of one part of nitric acid, eight parts of distilled water, and two parts of alcohol.

In 1851 Mr. Archer discovered the use of collodion in connection with photography. Collodion is a solution of gun-cotton in ether and alcohol. Poitevin was the first to use albumen and gelatine, mixed with the bichromate of potash, for the purpose of fixing a pigment upon paper, and thereby producing a print. Mr. Pouncy, of Dorchester, next introduced his carbon-printing process, which, although a modification of Poitevin's, was an independent discovery. He used gum arabic instead of albumen, and a porous paper into which he brushed the soluble pigmented compound. For the results he obtained, he received, in 1859, the prize offered by the French Photographic Society; and it is to the combined results of carbon-printing, the collodion image of Archer, and the bichromate of potash and gelatine of Fox Talbot, and nature-printing (to which I shall hereafter refer), that the art has attained to its present position.

Gun-cotton was first introduced to the notice of scientific men in England by Professor Schonbein, of Basle, in 1849, and its solubility in ether was then alluded to. Soon afterwards, M. Le Gray, of Paris, suggested the possibility of its use photographically; but to Mr. F. Scott Archer belongs the merit of having first combined with the collodion the iodide of potassium, by dissolving it in it, thus removing the difficulties which had previously stood in the way of its use photographically. He thus became the inventor of the collodion process, an account of which he published in the pages of the *Chemist* in March 1851, and in 1852 he issued a small manual of his mode of operating. So important was the discovery made by Mr. Archer considered, that, upon his death in 1857, a sum of money, as a testimonial fund, was subscribed by photographers on behalf of his widow and children; and upon the death of Mrs. Archer, the year following (1858), a pension of £50 per annum from the civil list to the children of the late Mr. F. Scott Archer, in consideration of the scientific discoveries of their father, was approved by her Majesty. This was the more readily granted, as the government had become aware of the value of Mr. Archer's discoveries by the use which it was able to make of them during the Crimean war, and subsequently in connection with a series of drawings and plans executed by the Royal Engineers, in reduction of the various ordnance maps, which reductions, it was stated, had been made at an estimated saving to the country of £30,000. The prints obtained by means of the collodion negative were free from the objections which attached to printing obtained through a paper negative, as the collodion film was entirely free from grain, and much more transparent than paper; but the print obtained by its means was still of a fugitive nature.

(*To be continued.*)

Correspondence.

THE EARLY USE OF IRON DEVELOPMENT.

Sir,—The leading article in the last number of the News at once touches on a very important and useful point of practice, and may throw some light on the solution of a question which has been often put to me: "Who was the originator of our present mode of working by iron development and subsequent intensification with pyro?"

Before we enjoyed the luxury of photographic journals, and in the days when hapless amateurs (and professionals away from town) were tormenting themselves with the constant difficulties which beset the path to photographic fame, a guiding star appeared in the form of articles commenced, I believe, by the veteran Dr. Diamond, in the pages of "Notes and Queries," and which caused that excellent periodical to be for some time a very *Fidus Achates* to the forlorn ones. In one of these articles, either by Dr. Diamond or the Rev. J. Lawson Sisson, two solutions were recommended for use, viz., an iron and a pyro developer, two parts of the first to one of the second for positives, and *vice versâ* for negatives. This plan was used for several years with great success by my friend Mr. Miles, of Fakenham, and by myself. The collodion we at first used was made by the late Mr. Archer; afterwards we prepared our own; and so early as 1853 we added bromide in small proportions, finding it give greater softness and less liability to solarization in the lights. The solutions were mixed at the moment of using. Subsequently I practised the waxed paper process, almost entirely for two years or more, until in the spring of 1856 I met in Liverpool a gentleman, who exhibited at the then Liverpool Photographic Society's meeting, in April of that year, a number of singularly beautiful stereos of Welsh views, which he had taken just before. They were remarkable for vigour and brilliancy, and the negatives were a treat to look at, so crisp and clear in the shadows, and so perfectly clean. The process was not then divulged, but it fell out that I made an arrangement to work with this gentleman, and assisted him to prepare his chemicals for another Welsh trip. For developer he took with him two large bottles filled with a mixture of *equal parts* of ordinary iron developer, and a solution of pyro two grains, citric acid one grain, to each ounce of water, and *filtered*. This lasted him for a three weeks' trip, and had not changed in that period from its original colour, which was that of water to which a few drops of ink might have been added to the pint or so. I may add that he frequently used the honey preservative as given by me in the News about two years since.

As I stated in that paper, I employed the honey solution during my long stay in Scotland, and when the plates had not been kept too long I used the same mixed developer myself, and found it the best plan by far when it was desired to include clouds and register gradations of distance.

No developer can be found to equal this for giving the atmospheric effects, which are the great charm of a distant landscape.

There can be no doubt that you do get with the mixture a quality of developer, and of picture, most valuable, and possessing a medium between the action of either solution separately. In copying certain difficult subjects, it is also most valuable; *e. g.*, oil paintings.

Now, concerning the origin of our present mode of working, I can say for myself that it grew out of the method just described.

As improvements were made in collodion, so we got a better image with iron alone, as a first application, especially after the use of a larger proportion of bromide.

I used the present mode of working in 1858-9-60, and as I was in the habit of devoting much attention to the production of first-class positives on glass, I had the advantage of being able to take either positive or negative with the same chemicals.

I was the first who ever used the present mode of working, in a well-known London house of high standing, and on one occasion, in 1859, the brother of a well-known and distinguished artist lately deceased, came in and wished a glass positive taken of a lady. The answer was, "Ask Mr. Fitt; *we* never took such a thing." The lady was posed, a plate prepared, and the result was one of the finest glass positives I ever saw. Mr. Bedford happened to be in the room adjoining, and was called by the principal to see it, as was also Mr. Delamotte. Mr. B. asked for the formula for working, and the principal asked me if I would state it in detail, and he would publish it in the form of a shilling book, uniform with several others he had published. However, unfortunately, I thought no more of it. Had I done so, I should certainly have been esteemed the originator of the plan now in universal use. Yet I had nothing to do with its general introduction, which was, doubtless, brought about by similar means acting in other photographers' minds.

I may add that I was highly amused some years ago by a statement by Mr. Sutton that "all attempts to intensify the image" given by iron "would fail." I was *succeeding* every day in those attempts. The plan, however, like all *dangerous innovations*, had its opponents; one gentleman vehemently denounced it, and, actuated, I fear, somewhat by personal dislike, laid every fault that might occasionally occur, to "that beastly iron." He has used it himself, however, for many years.

I need only add further, that the proportion of citric acid I have given is so small as in no way to neutralize the effect of the iron, while its presence at the time of mixing prevents any precipitation, the filtering being merely to secure cleanliness. The iron solution used was twenty-five to thirty grains, with the usual proportion of acetic acid.

Truly do most photographers display a singular want of resource in adapting means to ends.—Yours truly,

Geo. Robert Fitt.

COMFORT IN THE GLASS ROOM.

Dear Sir,—As glass houses are very hot places in summer, and as many photographers suffer with aching feet in consequence, I would advise all operators to wear grain or patent strap shoes, such as were worn in the days of Shakespere, as are now worn by children as dress shoes, and as many gentlemen are now wearing in the place of slippers. I myself have worn them for several years, and would not give them up for any other kind of boot or shoe; they keep the feet cool in summer, and warm in winter; the strap keeps them in place; and they always look dress.

Should this be a benefit to any of my feet-suffering brethren, I shall feel paid for my trouble.—I am, sir, your obedient servant,

James Browning.

High Street, Southampton, February, 1870.

MAGIC LANTERN QUERIES.

Sir,—1. May a pepper or coffee mill be used for reducing the crystals of chlor. of potassium, when making oxygen gas, to a uniform mass, before mixing in the manganese; and, if not, what is the danger?

2. Ought five feet of oxygen gas be sufficient for two hours' burning with an oxyhydrogen burner (56 lbs press.)?

3. Seeing it stated a year ago in the News that a metal bottle may be used for holding the gas in a condensed form, in using the oxy-hydrogen magic lantern, what size of bottle would be necessary for holding six cubic feet of gas? What would be the pressure per inch on the bottle? What thickness of iron would be required? And what would be the weight of the bottle? Could the gas be injected with an air-syringe, as an air-gun is charged, by hand?

4. Has no chemical or mathematical house produced commercially the improved lime or magnesium cylinders for the oxyhydrogen light? And are such improved cylinders capable of being used over and over for any number of times?

Lantern.

[We have submitted the queries of our correspondent to Mr. Martin, who has had a large practical experience with the lantern, and now append his reply, which will, doubtless, be instructive to many besides our present correspondent.—Ed.]:—

My Dear Sir,—In compliance with your request, I beg to state that I should think that a coffee mill might be used for the grinding of chloride of potash to powder for the purpose of making oxygen gas, provided it was in a dry state; but great care must first be taken to remove all coffee dust, otherwise the heat required for producing the gas would reduce it to charcoal, and thus most certainly cause an explosion; in the admixture of carbonaceous matter, such as soot or charcoal, with the chloride of potash, lies the danger, as the compound is highly explosive. The mill, after using, must be well cleaned out, otherwise, if it be placed in a moist atmosphere, the chloride will act upon the iron work and spoil it. There is no need of reducing the chloride to a fine powder; if it be bruised to a coarse granular state, it is sufficient; this may be done by spreading a portion of it over a piece of stout paper on a board or common table, and rolling over it a glass rolling-pin, or even a common quart bar bottle with sufficient pressure. I myself use a Wedgwood mortar and pestle for this purpose.

Five feet of oxygen gas are sufficient for two hours' consumption under a pressure of fifty-six pounds, but, unless for a very small-sized picture, one foot is generally used for the hydro-oxygen light. The consumption of gas is not so much governed by the amount of pressure as by the regulation of the stop-cocks and the size of the bore of the blow-pipes, which should be very small when to be used with light pressure; these are made in proportion to the size of the pictures the lantern will carry, and these again are limited by the diameter of the condensors. It should be remembered that insufficient pressure is one of the most dangerous causes of accident, and that therefore it is better to have too much than too little.

As regards the metal bottles or gasometers for holding compressed gas, they must be manufactured expressly for this purpose, and should be able to resist a pressure of nine hundred pounds to the square inch. One of these of sufficient capacity to hold six cubic feet of gas would measure, when packed in its case, about thirty by twelve by six inches, and would cost about two guineas and a-half. I cannot estimate the exact weight, as the filling—or, more properly speaking, the forcing—the gas into these bottles requires a very powerful apparatus, and is attended with danger from various causes. I should advise that it be not attempted by an amateur, and should not think that the pump of an air-gun, even if properly arranged, would prove efficient for the purpose. The thickness of iron for making the bottle could only be estimated by an engineer used to making boilers for steam engines, telling him, of course, the amount of resistance required.

There is a house in Leeds that is taking up the production of the compressed magnesia cylinders commercially, but I have not yet seen any in use. I should think that they would prove about as durable as the limes. The zirconia is said to last much longer.

Should your correspondent require any further information, he would do well to refer to a series of articles entitled "Photography and the Magic Lantern applied to Teaching History," by Mr. Highly, given in the Photographic News in the early part of last year; he will find the information therein contained interesting and reliable.

As I believe that compressed oxygen is to be procured in London, and the bottles loaned on hire, I should advise your correspondent against adventuring upon so dangerous an experiment as attempting to compress his own, as he would run a great risk of combining a portion of common air with it. Should an explosion of such a mixture in such a state take place, its effects would be disastrous indeed. There is, in fact, little need of all this extra trouble, expense, and danger, and the benefit derived from it is more theoretical than practical. In the first place, there can be little or no saving as to cost; and, in the next, the making of the oxygen in the usual manner takes so little time, and the operation is so simple and safe with properly constructed apparatus by a careful operator, that any accident can only be attributed to pure carelessness, and ought never to occur.

A few days since a personal friend gave a lantern exhibition in the town hall of this town, and I had the opportunity of observing his *modus operandi*. His apparatus consisted of a neat little pair of lanterns fitted with the oxycalcium spirit lamp, the bodies being much smaller than could be used with oil lamps. I remarked this fact to my friend. His reply was that he should never care to use such messy articles, as the oxycalcium light was so much better, and all the manipulations so easy and safe. The retort was of a conical shape, and held a one-pound charge of the usual mixture of chloride and manganese; the gas produced filled a bag; of these he had two, and the contents of both, produced from two charges of the above mixture, served for the whole exhibition. These bags were made of an india-rubber fabric, as flexible as a Mackintosh coat, and, being small, were more portable than any I have yet seen, as they could be folded up, when empty, in a very small compass. The pressure-boards also were not required to be either large or heavy. The india-rubber tubing, instead of having unions, slipped tightly over the metal tubes; hence, in making the gas, should it come over too rapidly, the effect would be to blow off the tubing, thus relieving the pressure and preventing accident. The whole apparatus, with slides and screen, were held in a moderate-sized box. The frame of the screen was ingeniously contrived; it was made of deal, in pieces of moderate lengths hinged together, and, when used, kept firmly together by thumb-screws, in a similar manner to the legs of a folding photographic tripod; at the ends were tenants and mortices placed one within the other, or separated as required for use or package. Around the edges of the screen were a series of rings; these, when it was wanted to be used, were attached to a corresponding series of pins driven in the face of the frame all round it. When wetted, the contraction of the fabric brought it up quite tight and without a crease. The frame was supported upright, whilst in use, by two slight pieces of wood attached to the sides and nailed to the floor. The size of the picture shown was about ten feet in diameter.

I shall be happy to afford any further information in my power, should it be required. J. MARTIN.

114, *High Street, Ilfracombe, Devon.*

NOTES OF EXPERIENCE.

GREEN *v.* YELLOW GLASS—GALLIC ACID IN COLLODION—GULLS—SULPHATE OF COPPER IN IRON DEVELOPER—LEAD PENCIL FOR STRENGTHENING NEGATIVES.

DEAR SIR,—

(1). Mr. Lea, in recommending green glass for the dark room, does not give very distinct directions as to the *tint* to be chosen. I have for some years amused myself by noticing the effects of various greens as seen through yellow non-actinic glass. Painters tell us that green is a mixture of blue and yellow, so I was not surprised to find that green fabrics lose their blue when viewed through yellow glass, and appear simply dark yellow or brown, according to their constituent colour; but leaves of plants appear *green.* This puzzled me much at first, till I thought there must be a green primary colour as well as the tints caused by mixing blue and yellow. I have only seen one artificial material whose green colour was not decomposed by yellow glass, and that was an india-rubber ball. Sir J. Herschell and some others believe in a primary green colour. This, I suppose, should be used for the dark room, unless Mr. Lea has discovered a non-actinic blue.

(2). I have tried gallic acid in one sample of collodion. No apparent change in the film till development, but then. fog, without any apparent gain in sensitiveness. The collodion contained a good deal of bromide. Perhaps with iodide, principally or only, the result would be different.

(3). Some time since I asked in the NEWS if there is anything better than Canada balsam with which to stick paper guards on negatives for combination printing. I find that is objectionable, as it in time penetrates the film, and stains it.

(4). I am surprised to see it stated that the method by which the famous gull picture was produced "still remains a secret." My only opportunity of inspecting it was on the crowded evening of the conversazione. There seemed to be no spot on any one of the birds darker than the background it came against. Lights can easily be added to a negative. I am not skilful enough to undertake to paint a similar group of birds, but I know enough of touching-up negatives to feel certain it would be possible to a skilful painter, and I fancy I know enough of photography to say that the gulls were not produced by photography pure and simple. I can quite sympathise with Mr. Robinson in his motive in taking this amusing revenge on his unthankful critics. Some people prefer to learn by their own experience only. I prefer, if you will kindly allow me, to thank Mr. Robinson for what he has permitted me to learn by his experience.

(5). Sulphate of copper is said to prevent the oxidation of solution of sulphate of iron, but it does not prevent precipitation when pyrogallic acid is added to a solution that has been kept.

(6). A good deal has been said in favour of lead pencil for working up negatives, but I do not think the following has been mentioned. If a negative in which foliage is too weak to print well is varnished *bright and hard,* a BB or BBB pencil can be rubbed vigorously over it in all directions, and will bring it up in due gradation without fogging the shades, or showing the touches.—I am, dear sir, yours truly, ED. SEELY.

[Without entering on the discussion here as to the relative adiactinic character of green glass and yellow glass, we should recommend the latter, because it permits the right colour to be easily selected. The orange or deep yellow tint desirable in glass for dark room windows is easily distinguished, while few things in colour are more deceptive to the eye than the various tints of green. 2. The value of gallic acid in collodion can only be determined practically, and will require many experiments under varying conditions. 3. We have always used gum or paste. 4. It is quite possible that the "gulls" were produced by one of the known methods, but which of them still remains a secret. It was evident, from the fragment of the negative exhibited, that they were not painted thereon. 5. So far as our observation goes, sulphate of copper is chemically inert in an iron developer. 6. The fact is curious, and a knowledge of it useful.—ED.]

COMBINED NEGATIVES.

MY DEAR SIR,—Perhaps Mr. Neal might find the plan which I suggested in the First Volume of the NEWS, page 203, "On Illuminated Paper Stereograms," useful in transferring the collodion films for combination negatives on to paper. I have not found that it requires more than a few minutes to detach the film from the glass after the plate has been placed in the water, provided the glass was perfectly clean before taking the negative, and the gutta-percha film is thick enough. Where the negatives are large, in place of a bottle a large smooth jar or glass cylinder might be employed. I think the thinner the paper the better, as it is really only required to enable the film to be cut with the scissors without tearing. Perhaps, too, the paper might be useful in the following way:—

Having transferred all the negatives required on to paper (I should mention that I have not found any shrinking of the gummed paper), I should cut the paper larger than the negatives, then gum the corners of the principal or ground negative, paper side towards you, on to a window where there is a good light; then, having arranged where the portions of the combination negatives—as I shall call them—are to be introduced, gum these (the other negatives) also on to the window in the same way; then, with a sharp-pointed, soft black-lead pencil, draw on the paper the outlines of the figure, or whatever in the negative is required; then, from that, take a tracing from which to cut out the figure, &c., on black paper; then gum this black paper on to the principal negatives in the exact position required (this will enable you to cut out the part correctly, the black paper being a guide; then, from each of the combination negatives cut the parts required to be put into the principal negative, carefully following the pencil outline with the scissors. Gum a piece of thin paper on to these, large enough to leave a margin by which to attach them in their exact positions in the parts cut out of the principal negative.

I think the cutting out might be done while the negatives were attached to the window, by using a fine pair of curved scissors. It would save handling the film, and keep the paper flat.

When the combination is completed, and all is dry, the negative may be removed from the window and placed on to a plate of glass. I have found that gum spread carefully on to the glass plate, so as not to make ridges, and allowed to become set, but not dry, retains the film perfectly. The gutta-percha side being in all cases next the paper, of course the negative would have the collodion side next the glass, as it originally was; and, when perfectly dry, the whole of the paper may be carefully removed by damping, as Mr. Neale suggests.

Of course, as he remarks, the operator must be skilful in the use of the scissors, and very correct in the cutting out.—Believe me, yours very truly, Thomas Barrett.

Mead Vale, Red Hill, February 15th, 1870.

COMBINATION NEGATIVES AND BIFACIAL MEDALLIONS.

Dear Sir,—I have now the pleasure of sending for your critical examination a print from a *single combined negative*, and also hand you for inspection the negative itself from which the print was taken. I have endeavoured to adapt my process to some useful purpose for portraitists, for undoubtedly portraiture is the principal item of business with professional photographers, and I imagine that an extra fillip or stimulus given to that branch of business, if effected without any additional outlay, is a thing much to be desired. The application of my process to portraiture is as severe a test as could easily be suggested, for nothing is more exacting in its demands. Any accidental slip in combining some pictorial or artistic effect to a landscape or composition can easily be slurred over without chance of detection; but it is a very different thing with the "human face divine," which cannot he so easily disposed of, so that your fancy will readily suggest to you that if I could combine effects, as in the present instance, how easy would be the production of, say, birds in landscapes, or similar ideas, that have lately been discussed in the pages of your excellent journal.

It is, as you see, a double medallion, or two heads in profile, similar to the "William and Mary" coin, and other medals. This, obtained by double printing, would be, as you know, a rather serious matter for portraitists to engage in, as each picture would take too much time and skilled labour and attention to be profitable. Then, as to cost, at what price could they be produced to be remunerative? Too high, I fear, for general adoption. By my method I can hand over the negative to the printer, and know that it requires no more care than an ordinary card, so that I can furnish them to the public at an additional cost, at, say, half as much again, or perhaps double the ordinary price, so that I am well repaid for my additional trouble, and the charge kept within reasonable limits; thus (the price no longer being a bar) a *new want* will be created, for it is easy to see how many couples will be eager to be supplied with a picture as much in unison with feelings of affection as they are in the picture itself. To judge from experience, I should say that it will become popular as a "bridal card;" in fact, there is hardly any class of the community but what such a picture affects, and I confidently think that photographers may add very considerably to their receipts by its general introduction.

I hope in a week or so to announce, through the medium of your advertising columns, that I am ready to furnish copies of my picture to those who desire a specimen, and, at the same time, a proposal of the ways and means for its production.

I have named the picture the "Bifacial Medallion," which, on mature consideration, appears to well express its meaning, and is sufficiently euphonious to the ear.—I am, dear sir, yours truly, Thos. G. Hemery.

8a, *Bruton Street, Berkeley Square, W., 15th Feb.*, 1870.

SPLITTING FILMS.

Sir,—I see many complaints of splitting of films. I have of late years been in the habit of coating my plates with wax as a precaution against dirtiness of the plate, and have never had any plate so prepared suffer in any way from dampness, either cracking, peeling, or splitting.

I rub on etherial solution of wax, warm the plate till the wax peels, and then with cotton-wool rub off all I can easily.—Yours truly, W. J. Stillman.

London, February 12th, 1870.

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Talk in the Studio.

Lichtdruck.—We have been favoured by Herr Kleffel, of Berlin, with some very fine examples of the Lichtdruck process of Ohm and Grossman. He remarks that these gentlemen, having seen some recent remarks we made in the News, to the effect that the examples of their work which we had seen were inferior to those of Herr Albert, desire our opinion of some prints recently produced by their pupils. These are excellent in quality, and of good size, being on ten by eight and twelve by ten plates. They are all good, and one especially is a charming picture; the subject is a sedgy pool, with a foreground of tangled wild plants and rushes, in which a number of wild ducks are most admirably grouped. All the prints are bold and fine in half-tone; but still we are compelled to state that they do not quite equal in delicacy, brilliancy, and general technical perfectness, the recent specimens we have received from Herr Albert. Of the latter, we may remark, by the way, that a specimen issued in the last number of the *Correspondenz* is quite indistinguishable from a print on albuminized paper.

Fine Art Copyright in Canada.—The *Stationer* says:—"A photographer in Canada, having successfully copied all the drawings by a celebrated artist that recently appeared in an expensive work issued by a well-known English house, recently applied to the publishers to grant him permission to sell them here. This was of course refused. The plagiarist, therefore, has written to the effect that in spite of the copyright law the refusal is unnecessary, as he shall send the negatives over the border, have copies printed in the United States, and then import them as American productions."

Poison by Absorption.—Photographers should beware of the unnecessary contact of poisonous solutions with the skin. A gentleman was recently poisoned in Liverpool by absorption. At the inquest it was stated that the deceased told a witness that he had been rubbing himself with the solution produced, which was a concentrated solution of the perchloride of mercury. It was a foreign preparation, made in Paris, and correctly labelled in French. It ought to be used very largely diluted with water for bathing purposes. The deceased had died from the poisonous effect of the absorption of this poison into the system. The jury found that the deceased died from the effects of a poisonous mixture absorbed into the system, ignorantly applied to the body as an external lotion by the deceased himself.

Mr. Ruskin and Italian Photographs.—Mr. Ruskin, who has at times attacked photography somewhat bitterly and unfairly, has recently availed himself of it largely in illustration of a lecture on Verona, which he gave at the Royal Institution, to one of the most distinguished and crowded audiences ever assembled within its walls. The building was crowded almost to suffocation at least half an hour before the time of lecture, nine p.m. Mr. Ruskin's eloquent discourse was illustrated by drawings and photographs framed and exhibited in the library. Many of the architectural drawings were by Mr. Ruskin himself. The photographs were chiefly by Mr. S. Thompson, being a selection made by Mr. Ruskin from Mr. Thompson's large series of Verona, made for the Science and Art Department, and consisted mainly of those especially illustrative of the *Lombardic* and the *quattro-cento* periods—the periods to which Mr. Ruskin in a great measure confined his lecture. A catalogue for the drawings and photographs, with descriptions, was printed and circulated amongst the visitors. Mr. Ruskin, after some preliminary observations, took his hearers with him in imagination to the heights above Verona, and with the passing but most picturesque allusion to the limestone rocks around—for "in that white rock there are fossil creatures still so like the creatures they were once, that there it first occurred to the human brain to imagine that the buried shapes were not mockeries of life, but had indeed once lived, and, under those white banks by the road-side was born, like a poor Italian gipsy, the modern science of geology"—he proceeded to paint one of those wonderful word-pictures which Mr. Ruskin alone can paint, adding: "Now I do not think that there is any other rock in all the world from which the places and monuments of so complex and deep a fragment of the history of its ages can be visible as from this piece of crag with its blue and prickly weeds; for you have thus beneath you at once the birth-places of Virgil and of Livy, the homes of Dante and Petrarch, and the source of the most sweet and pathetic inspiration to your own Shakespeare—the spot where the civilization of the Gothic kingdoms was founded on the throne of Theodoric; and there, whatever was strongest in the Italian race redeemed itself into life by its league against Barbarossa; the beginning of the revival of natural science and medicine in the schools of Padua; the centre of Italian chivalry, in the power of the Scaligers; of Italian cruelty, in that of Ezzelin; and, lastly, the birthplace of the highest art; for among those hills, or by this very Adigo bank, were born Mantegna, Titian, Correggio, and Veronese."

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To Correspondents.

Charbon.—The volume of the Photographic News commences on the first Friday in each year. 2. The best carbon process is that of Mr. Johnson, of which the Autotype Company are the patentees. The terms of the Company are not oppressive. Of the best unpatented carbon processes you will find details in a pamphlet published by Mr. Blair, of Perth. Fargier's process, which is useful for experiment or for amateur purposes, is now unprotected. But, in our estimation, Johnson's process, which is an improvement on Swan's, similar to the improvements Swan's was upon previous processes, is so immeasurably superior to others, that we should have no hesitation in adopting it in preference to all others. There were several articles on the subject in last year's Volume of the News, and you will also find it described in our Year-Book just issued. If there are any points you do not understand in the description, let us know.

Bichromate.—We do not know of anyone who has manufactured collodion tissue but M. Marion. 2. The patent of Fargier's carbon process has expired, and the processes described in Mr. Blair's pamphlet are unpatented. 3. The manufacture of Swan's pigmented gelatine tissue is protected in his specification. 4. The preparation of paper with gelatine without pigment is not patented. 5. We do not know the prices for printing charged by either of the gentlemen named; but, so far as we remember, the price of Woodbury prints of the size named would be about £4 or £5 per thousand.

Alpha.—The photographs on the screen may be sized and varnished in the same way as ordinary prints. 2. The apparatus is not manufactured for sale, so far as we know, but you may get one made for yourself. The pictures you describe are produced by several exposures in the camera in the manner of "doubles." You will find the method described in our Year-Book for 1865, and in our Volume of the News for 1864. 4. The number of the News for February 12th, 1864, is out of print; that for August 5th of that year can be had. The Year-Book for 1867 has been sent. We will try to get you one for 1866, which is now out of print.

Mond.—Much depends on the construction and purpose. If the two lenses are equal in other repects, the fewer the component parts the better.

B. S. E. W.—A weak solution of chloride of lime will possibly remove the spots.

W. L. S.—The spots to which you refer as occurring on collodio-chloride plates may proceed from two or three causes. One cause is the presence of too much free nitrate of silver in the collodio-chloride. Another cause is keeping the plates too long after they are coated with the collodio-chloride. We prefer to dry before a fire and expose at once. The absence of such artificial drying, and the excess of nitrate, may account for the silver stains on the transparent print to which you refer. Probably the collodio-chloride transfer paper sold by Mr. Solomon would answer your purpose for reproducing negatives.

W. S. Buddecom.—The letter was duly forwarded.

W. Wakefield.—There is no certain method of restoring faded albuminized paper prints. Immersion in a weak solution of bichloride of mercury may improve them. A good plan is to immerse sheets of blotting-paper in the mercury solution, and then place the prints between alternate sheets, and allow them to remain a few hours. Immersion in a neutral solution of chloride of gold, about one grain to an ounce of water, in some cases restores the colour. If the chloride of gold be acid, the prints will be somewhat bleached.

Subscriber to the Photographic News.—In regard to your registered print your remedy is simple. You can summon the persons who have pirated it before the magistrate, where, on proof of the piracy, a penalty will be inflicted; or you can proceed in equity, and obtain an injunction, and also sue for damages. Your simplest course would be, first of all, to write to the firm, pointing out the unauthorized use of your photographs, and probably obtaining a remedy by arrangement, as the firm is a respectable one.

J. B. Mackenzie.—We are not aware whether the compressed oxygen is supplied commercially by anyone. 2. The stereoscopic lenses may be used, and without any risk. 3. It is not customary to trim prints before sending them to a professional mounter.

Lantern.—You can obtain the number of the News you require on sending stamps to the Publisher. See answer to your other queries on another page.

A Reader.—You may not copy a registered photograph for any purpose whatever without the consent of the owner of the copyright.

Phiz.—A score of such changes as you describe, which would be effected in from one to two hours, would, we think, be sufficient. 2. It is difficult by any test to be absolutely sure of the perfect removal of the hypo. A drop of nitrate of silver solution in the last washing water will cause a brown turbidity if any sensible amount of hypo be present. A solution of nitrate of mercury will produce a similar result; and various other tests have been described in our back volumes and Year-Books. Either imperfect washing or imperfect fixation will cause eventual fading; but we believe more prints fade from imperfect fixation than imperfect washing.

T. P.—The prints have the appearance of being printed from weak, fogged negatives, but, assuming the negatives to be good, the probable cause of the weak, flat appearance of the prints is that the paper has been dried by the fire, and made too dry before exposure in the pressure frame. Absolute dryness of the paper will cause such a result. Let us know fuller particulars. There are various formulæ for adding nitrate of soda to the bath; the proportion may vary from thirty grains to sixty grains per ounce, without serious difference in result.

Quarter-Plate Lens.—There is no reason why a card lens or a quarter-plate lens should not be used on a half-plate camera, if the latter will close up sufficiently to suit the focus of the lens. If the camera can be closed, so that there are not more than five or six inches between the ground-glass and back lens, it will doubtless answer.

F. M.—The cards are very good under the circumstances. Glass has no especial advantage in itself in the studio, except as a means of admitting light and securing shelter. Open space, instead of glass, will answer as well, or better, in fine weather, provided that proper arrangements for securing light and shade exist. The female figure is not quite so well lighted as might be; the light is too directly from the front and top; the other is better.

Bromo.—We believe that you can obtain them at Newman's, Soho Square.

J. M.—We believe that the general practice of the carbon process must eventually prevail in portraiture, and that those who first commence it secure the best chance.

Lux et Salus.—In our next. No letters yet.

Magic.—There are transparent colours prepared for colouring glass slides. 2. A collodion film is better for a coating of very dilute albumen. 3. It is not necessary to varnish after colouring. 4. There is a manual by Edward Groom devoted to the subject. It is published at a shilling by Winsor and Newton.

J. Powell.—Thanks; in our next.

The "Report of the Council of the Photographic Society,' and other articles in type, are compelled to stand over for lack of space.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 599.—*February* 25, 1870.

CONTENTS.

PAGE
Extended Enterprise for Photographic Portraitists 85
New Uses for Photographs 86
On Photographic Enamels 86
Fluorides in Photography 87
American Correspondence 87
Preserving Prints from Discolouration during Long Exposure in the Printing Frame. By J. Grasshoff............... 89
Recent Patents 90
On Errors of Perspective in Portrait Photography. By Dr. H. Vogel 89
Photographic Society of London—Report of Council 91
Prints and their Production. By S. T. Davenport 93
Correspondence.—Gallic Acid in Collodion 94
Proceedings of Societies.—South London Photographic Society 94
Talk in the Studio 95
To Correspondents 96

EXTENDED ENTERPRISE FOR PHOTOGRAPHIC PORTRAITISTS.

If the whole of the few thousands of professional photographers in this country could be polled for an answer to the question whether they would willingly extend their businesses and increase their reputation, there would be found but a very small percentage, we apprehend, who would answer in the negative, whilst a very large proportion would probably profess themselves eagerly anxious to adopt any method presenting a legitimate hope of leading to the desirable result we have mentioned. Yet there is, it must be admitted, a singular supineness shown in relation to many possible and accessible methods by which there can be little doubt the business of the portraitist might be increased, his patrons gratified, and his reputation enhanced.

The actual or alleged reason for such supineness is generally the existence of real or supposed difficulties in mastering new branches of the art. The production of enlarged portraits, for instance, presents an undoubted means of increasing the business of the portraitist, as many a customer sitting for cards would be tempted to have an enlargement made from a small portrait which pleased him, if good specimens were shown to him, and the production of the enlargement would necessarily be a distinct addition to the business, as it could not take the place of the cards in supplying the wants of the sitter. Notwithstanding this, many photographers do not undertake such work, because a solar camera is costly, and because there is but little sunshine to be certainly depended upon. If the magnesium light be suggested as a substitute, it is objected that the wire is so dear, whilst in truth but a few pennyworth of wire need ever be expended in producing work which shall bring in pounds. But it is next urged that the first cost of apparatus is great, an objection easily disposed of by the reflection that the profit of the first half-dozen enlargements produced may pay for the whole equipment necessary for enlargement. If the method of enlarging on collodion and trasferring the film be employed—a method giving the most presentable results, where the enlargement is not intended for colouring—the photographer has all the materials at hand; his ordinary collodion, bath, &c., may all be employed, the only additional cost being for a comparatively inexpensive enlarging camera; and the only additional trouble, the practice necessary to master the process of transferring.

The production of photographic enamels is a branch of portraiture which cannot fail to be lucrative and creditable. Like the enlargement, the enamel will, of necessity, be an extra, which will not displace the ordinary business of the photographer, and if the work be done fairly well, it must add considerably to his reputation. The stigma of instability, commonly urged against photographs, may be proudly answered by showing examples of photography which are not only permanent, but imperishable. Enamels are in existence which have existed unchanged from the earliest periods of history, and there is no reason to doubt that the enamel photographs taken in this day will exist for thousands of years. The results are as beautiful also as they are permanent, and they are very easily and cheaply produced. Yet how many—or, rather, how few—photographers, we wonder, undertake to produce enamel portraits in their business?

Carbon printing, there can be little doubt, will eventually prevail to a large extent, if not altogether, in portraiture. As the fact becomes gradually impressed on the public mind that photographs in permanent pigments can be produced, they will demand that the portraits for which they sit to distribute amongst their friends and children shall be produced by a permanent process instead of a process yielding fugitive results. And it is tolerably clear that they who are first prepared to meet this demand will gain in patronage and reputation: yet it is doubtful whether a dozen portraitists, or even half that number, have as yet made any preparation for adopting this inevitable improvement.

In all these cases, and several others which might be cited, by which increased income might be obtained, there is undoubtedly a little trouble and a little cost to be incurred; but the imaginary difficulties are much greater than the real ones, and might easily be overcome by a little vigorous effort. We have been led especially to make these remarks because we wish to call attention to the fact that one very essential facility for acquiring a knowledge of the working of new processes—or, at least, some new processes—has recently been established. Many photographers are deterred from attempting novelties, because the attempt involves a great deal of experimental effort, which no descriptive articles can render unnecessary, whilst one opportunity of seeing the operation would make everything easy. Mr. Solomon has recently, in relation to several novelties, established a system of teaching in his establishment. The processes taught are photographic enamelling, the production of collodio-chloride transparencies by an easy method, the multiplication of negatives, and enlargement by means of the magnesium light. The latter we have already described, and of the others we shall give some details in the present and a future number of the Photographic News.

Carbon printing has been for some time past practically demonstrated to photographers, duly accredited, by the Autotype Company, and professional photographers generally will, we believe, be permitted to witness the simple and certain operations in Mr. Johnson's process on duly making application.

Our especial aim here is to urge upon photographers a more ready and general adoption of novelties, for which so many facilities are presented, and by which, in so many cases, new and lucrative branches may be added to the ordinary business of portraiture.

NEW USES FOR PHOTOGRAPHS.

The uses and applications of photography rapidly multiply, and some of them are singularly diverse in their purpose and character. Of two of the most recent, the first is intended to win for the original, public favour, and the second is intended, if not to hold the originals up to general scorn and derision, at least to render them marked men, to be pitied and avoided. We find, in the election intelligence of a daily contemporary, a statement that at Nottingham the two daughters of Mr. Digby Seymour, the Conservative candidate for the borough, have canvassed the electors, and distributed broadcast, in the public streets and market-place, photographs of their father in his robes as Recorder for Newcastle; also cards bearing the following inscription:—"Nottingham Election, 1870.—Miss Seymour solicits your vote and interest on behalf of her father, W. Digby Seymour." Mr. Digby Seymour is a fine looking man, and in his Recorder's robes looks, as Mrs. Brown would phrase it, "noble." We may hope that the filial faith of the young ladies in the trustworthy and effective bearing of their father may be duly rewarded by a successful issue.

The second application is much more questionable, although unquestionably well meant. Dr. Martin, the honorary secretary of the Licence Amendment League, recently proposed at a conference held at Birmingham that photographs of confirmed drunkards, who had become notorious by frequent appearance at police courts, should be distributed to the landlords of the public houses in the district, and that supplying drink to the men so posted should render the landlord liable to a penalty. However worthy the motive, it seems clear that such a course is open to serious question, and a Liverpool paper, the *Mercury*, passed some severe strictures upon it, to which Dr. Martin replies, expressing a conviction that it is better to interfere with a man's liberty, by preventing him from going into a public house, than to build an asylum, and provide doctors and keepers, not merely to limit the man's liberty by keeping him out of the public house, but to take it away by putting him into confinement." He protests, however, that he had no idea of holding up the miserable victims so photographed and gibbeted to ridicule, but to assist in preventing them from procuring liquor. He says:—"The Licence Amendment League, seeing how helpless the law is at present, how utterly it fails in its attempts to deal with drunkards—many of these being brought up for the tenth, twentieth, fiftieth, or hundredth time—proposes that the magistrates should have power to publish the names and descriptions of confirmed inebriates, and to prohibit any one, under a heavy penalty, from knowingly supplying them with liquor. At the Birmingham conference it was pointed out that, whilst this might suffice in small towns, it would be totally insufficient in larger ones; and therefore, just as confirmed criminals are now photographed, and copies sent to all the police offices in the district, so when a man or woman has been convicted three or four times of drunkenness, it might be desirable to send, not merely name and description, but a photograph, to all the public and beer houses in a town."

ON PHOTOGRAPHIC ENAMELS.

On another page we have mentioned the fact that Mr. Solomon has established facilities for teaching several useful, but comparatively little known, branches of photography, one of which is the charming process of producing photographic enamels. We propose here briefly to describe the operations as we recently saw them carried out at Mr. Solomon's establishment by Mr. Walter Paul, his skilled assistant.

We may explain, before proceeding, that there are several methods of producing photographic enamels, some of which are secrets; but of the known methods there are two of a representative character, each producing good results, but each essentially different, in principle and manipulation, from the other. The first consists in the production of a transparent positive image in silver by the ordinary wet process, and then transforming that silver image into one of some other metal or metals suitable for vitrification, which, on being subjected to the proper heat in the muffle, shall yield a ceramic image of good colour. This method has been attempted from a very early period of photographic history; but, until recent years, without very good results. Herr Grune, of Berlin, has been most successful in working on this principle, having reduced it to a very perfect system, which he patented a little more than three years. Mr. Solomon has purchased from Herr Grune such instructions and recipes as are necessary to practise the process, and supplies instructions and materials prepared ready for use.

The second method depends on the action of light on an organic body in combination with a bichromate, a ceramic powder being made to adhere to a prepared surface in the inverse ratio of the action of light. There are several formulæ for such a process, and some patents have been taken in connection with this method. The process which Mr. Solomon teaches is that of Messrs. Geymet and Alker, of Paris, and it is that we saw carried out, and which we shall now briefly describe, premising that no written description can be so instructive as a personal lesson.

The first step in the process is to obtain a good transparency from the negative. This may be done by camera printing on wet collodion, by means of contact printing on a dry plate, or, as is preferred, by means of our collodio-chloride process, prepared paper for which is kept ready for use. A plate of glass is then coated with a mixture of honey, sugar, gum, glucose, and bichromate of potash. The exact formula employed by Mr. Solomon we do not know, but our readers may find the formulæ of Messrs. Geymet and Alker and others in Dr. Liesegang's article in our Year-Book for 1869. The plate is coated with this preparation, dried by heat, and exposed to the light. If ordinary daylight be employed, some judgment and experience are necessary; but if the magnesium light be employed, a certain number of feet, a weighed or measured quantity, may always be depended upon as giving sufficient light. The plate is now taken back into the dark room to undergo an operation equivalent to development.

It must be remembered that the mixture with which the plate was coated has the property of being hardened and rendered insoluble by the action of light. Having been exposed under a transparency, the lights of the picture are made insoluble, whilst the shadows, being protected by the dense parts of the transparency, remain soluble and ready permeable by moisture, the various gradations from high light to deep shadow acquiring a degree of hardness or insolubility in the exact ratio of the action of light. This film, consisting of bodies more or less hygroscopic, absorbs moisture from the atmosphere readily in the shadows, which have been quite protected from light, and in graduated ratio in the parts which have been, in various degrees, acted upon by light. Wherever the film absorbs moisture it becomes slightly sticky, and it is upon this quality that the possibility of securing a ceramic picture depends.

An enamel colour in fine powder, consisting of a suitable metallic oxide, and, in some cases, a little of a proper flux, is now applied with a camel-hair brush. This at once adheres to the deep shadows where the film is most sticky, and in the ratio of the protection from light it sticks to the various gradations of tone. The powder is applied gently, a little at a time, the plate being allowed now and then to rest for a minute or two until more moisture is absorbed from the atmosphere. When sufficient of which light, acting on the film of gelatine through the lines of the etched negative, hardens and renders insoluble in water the parts of the gelatine or other surface so acted on. The other parts of the gelatine film which have been protected from the action of light by the metal deposit on the negative remain soluble. After thus exposing the gelatine plate to light I place it in warm water, which dissolves the gelatine in those parts not acted on by the light, leaving a picture in relief corresponding to the lines and marks of the etched negative, thus forming a raised printing surface. From this raised surface a print can be taken by any of the usual methods of block printing, or a transfer can be made on to stone; but I prefer to reproduce it in stereotype, cast electrotype, or by other method, and from any of these to print in the usual manner.

PREPARING MAGNESIUM AND ITS CHLORIDE.

BY HENRY LARKIN AND WILLIAM WHITE.

The following specification describes methods of preparing chloride of magnesium and metallic magnesia for illuminating purposes.

This invention has for its object improvements in the manufacture of magnesium and in the preparation of its anhydrous chloride. Magnesium is obtained by the reaction of sodium on the anhydrous chloride of magnesium, and the chloride of magnesium is prepared by dissolving the carbonate in commercial hydrochloric acid. We, according to our invention, use or add the hydrochloric acid in such proportion relatively to the carbonate of magnesia that in the solution obtained the acid shall be considerably in excess. We then partially dry the acid solution in thin layers in covered dishes at a temperature of about 110° centigrade, taking care that there shall be sufficient aperture for the ready escape of the heated acid vapour. The vessels used may be of glazed earthenware or porcelain. When the acid solution is thus made as dry as can conveniently be done at such temperature, we remove the residue from the evaporating dishes, and place it in plumbago or other suitable crucibles or vessels, in which we rapidly fuse it at a red heat under as close cover as is practicable. The partial drying of the dissolved chloride, and its subsequent igneous fusion, may be very rapidly accomplished by passing copious streams of hydrochloric acid gas over the acid solution, first at a moderate heat, and then fusing the salt as quickly as possible at a red heat. These operations may be readily carried on upon an enormous scale at the various soda works by utilizing the almost waste fumes of hydrochloric acid gas as they pass from the salt cake furnaces in the production of sulphate of sodium from common salt. It would be quite unnecessary to take any extreme precaution to render the gas perfectly dry, hydrochloric acid as it passes from the salt cake furnace in the production of sulphate of soda being sufficiently dry for practical purposes.

The process above described may be varied by using, in place of carbonate of magnesium, the hydrated chloride of magnesium of commerce, in which case the chloride is dissolved in commercial hydrochloric acid, and from this point the process is conducted as before.

We claim, as respects this part of our invention, the manufacture of anhydrous chloride of magnesium by drying a solution containing an excess of hydrochloric acid, and afterwards rapidly fusing the salt.

We also, according to our invention, obtain chloride of magnesium by dissolving its oxide in an aqueous solution of chloride of ammonium, using the latter somewhat in excess of their respective equivalents. The two materials are thoroughly mixed in a covered vessel, and exposed to a gradually increasing heat, which, however, should not be carried higher than 130° centigrade. As soon as the materials are thus mixed, chemical action between them commences, and increases with the heat. The chlorine combines with the magnesium of the oxide to form magnesic chloride, which remains in the vessel, while the ammonia volatilizes off, and is condensed in proper receivers. Thus by this process we substitute the oxide of magnesium for the lime commonly used in the manufacture of ammonia from salammoniac, which process is familiarly known to manufacturing chemists. We use by preference a saturated solution of chloride of ammonium. Carbonate of magnesium may, in a similar way, be substituted for the chalk used in the production of carbonate of ammonium. By such substitutions we obtain a kind of bi-product, magnesic chloride, in a highly-dried condition, instead of the ordinary calcic chloride, for which there is but little commercial demand.

When the material thus obtained is sufficiently dried, which may be known by the gradual cessation of the ammonia fumes, it is removed into a plumbago crucible, and fused under as close cover as possible at a red heat. In this latter operation, as in the former, a condensing apparatus is attached, to collect the fumes given off at the greatly increased heat, and which consist principally of ammonia and of the excess of salammoniac used in the original mixture.

We claim, as respects this part of our invention, the manufacture of anhydrous chloride of magnesium by acting with an aqueous solution of chloride of ammonium on magnesia, or on carbonate of magnesium, and fusing the solid residue which remains when the ammonia has for the most part escaped.

Another part of our invention relates to the manufacture of magnesium from anhydrous chloride of magnesium. We proceed by placing the said chloride with a proper equivalent of sodium in a plumbago, iron, or other suitable crucible or retort; the retort is constructed with a neck having a stopper accurately fitted into it, but capable of being easily removed. The sodium and magnesic chloride having been secured in the retort, the whole is submitted to a full red heat until the reaction of the contents is completed. The stopper is then quickly removed, and a condenser fitted on to the neck of the retort. When all is thus arranged, the heat is increased until the metallic magnesium is distilled off and received into the condenser; or the condenser may be connected with the retort at the commencement of the operation, and, at the proper time, the stopper be withdrawn by means of an iron rod connected with it and passing through the condenser. The residue, after the distillation of the magnesium, and consisting chiefly of chloride of sodium in a fused condition, may then be poured out of the retort, which will thus be emptied for another charge. In carrying on this operation the retorts may be made of any convenient size, in form like a mercury bottle with a neck attached. They are received into a furnace, from which, however, they can be removed for emptying in a slightly inclined position, so that the materials when fused may not run into the neck, the mouth of which projects from the furnace. Into the neck a screw or other plug is fitted, to close it until it is desired that the distillation should commence. The neck also receives the condenser upon it, so as to project from its end; it may be attached by screw clips, or in any other convenient way. The condenser we employ is an iron cylinder of about one-third the size of the retort; its surface is exposed to the air, and so is sufficiently cooled. It is a close vessel, except that there is a hole in its end for the passage of a rod, which is formed or fixed on the plug by which the retort is closed. This rod is used for removing the plug when it is desired that the distillation should commence. The rod loosely fits the hole in the condenser, and no special care is required to make a tight joint at this place. In conducting the process, the retort, with the materials enclosed within it, is first heated to the degree required for the reduction of the metal, and this heat is continued for a sufficient time, just as is usual in the reduction of magnesium; but when the reduction is complete, in place of cooling the retort or crucible and removing the crude metal in the solid state as heretofore, the plug is removed from the mouth of the retort and the heat increased, so as to distil the magnesium over into the condenser. When the distillation is complete the condenser is detached from the retort, and the metal is removed from it. The retort also is removed from the furnace and its contents poured out.

We claim, as respects this part of our invention, the distillation of metallic magnesium out of the retort or vessel in which it has been reduced from the anhydrous chloride, in place of, as heretofore, cooling such vessel and removing the reduced metal in the solid form.

PHOTOGRAPHIC SOCIETY OF LONDON.—REPORT OF THE COUNCIL.

In presenting their report of the progress made during the past year in all branches of photography, and in referring particularly to the subjects of interest which have come within the range of the Society's formal recognition in the shape of proceedings, the council consider that there is much room for congratulation. The meetings have throughout been well attended, a most successful exhibition held, and an increased number of members gathered to our ranks.

The chief features of novelty which characterise the past year are, undoubtedly, those connected with improvements in the mechanical printing processes, and simplified methods of carbon printing—results which cannot fail eventually to supersede the old process of silver printing, as being more permanent and better adapted to meet the requirements of large commercial demand. Recent specimens of work executed by Herr Albert, Mr. Woodbury, Mr. Griggs, and by the Autotype Company have been submitted to the notice of the members, and other processes remain to be described.

Facilities in the way of preparing permanently sensitive printing papers have been offered in the shape of carbonate of silver, collodio-chloride, &c., which may be said to be still under trial. Photographic transparencies and enamels have been considerably improved, and the dry-processes rendered more certain. Enlargements and apparatus for their production have been shown and described.

The practice of combination printing has been extended with increased success. Portraiture has been made the subject of earnest study with more artistic results, and a new style (Sarony's) added to that introduced, in 1867, by M. Adam-Salomon.

The following communications have been read, and processes practically demonstrated before the members of the Society, in the course of the seven ordinary meetings appointed for the formal reception and discussion of photographic results, viz.:—In April last a lecture on the Manufacture, Properties, and Applications of Gun-cotton, illustrated by numerous experiments, was delivered by Mr. E. O. Brown, of the War Department. The several qualities of gun-cotton were described, the conditions of permanence and variations in the mode of combustion were pointed out, together with the newly-discovered method of obtaining extraordinary disruptive effects by the explosion of compressed gun-cotton ignited by a detonating fuze.

At the last anniversary meeting Mr. Louis Bing described a new portable actinometer, and enunciated the general principles of actinometry. We have had from Mr. Woodbury a demonstration of his latest mode of working the photo-relief process, and from Mr. J. R. Johnson a new and simplified method of carbon printing, in which the transfer of the exposed pigmented tissue and subsequent development of the print are greatly facilitated. At the December meeting we were favoured by Dr. Van Monckhoven with a demonstration of his new artificial light and apparatus for the production of photographic enlargements, which, so recently exhibited, requires but brief comment. The light is produced by directing an oxyhydrogen flame upon the surface of square columns, or pillars, of carbonate of magnesia, which, undergoing ignition with loss of carbonic acid, produces a *nascent* and honey-combed condition of calcined magnesia, said to be peculiarly well fitted for the development of chemically active rays when rendered incandescent by the high temperature of the flame. In the course of these experiments Dr. Monckhoven used as negatives some finely graduated transparencies printed by the collodio-chloride process. A discussion on the causes of the destruction of negatives by cracking of the film was initiated at the May meeting of the Society by Mrs. Cameron, and a variety of practical suggestions were offered by Mr. R. W. Thomas, Mr. Blanchard, and others, for overcoming this evil. Mr. England gave some valuable experiences "on the preservation of negatives," in the form of a communication to the Society's Journal. At the same date Captain Lyon gave an account of his photographic operations in India, and exhibited a large series of ancient Hindoo temples and other archæological subjects, which were greatly admired as being excellent specimens of photography taken under difficulties. The June meeting was devoted to the description of Mr. Gordon's gum-gallic dry process, which appears to have given general satisfaction to those who have practised it during the past season. In the following month Mr. Whiting described, in the Journal, a modification of the process which he is in the habit of adopting in the preparation of dry plates; and some later suggestions relative to "alkaline wet processes," from Mr. Blanchard and Mr. Sutton, have also appeared in the Journal.

A novelty in portraiture was introduced last year by Mr. Sarony under the name of "Photo-Crayons," and the first specimens taken by this method were exhibited, at the March meeting, by Mr. Jabez Hughes. They may be described as collodion transparencies, vignetted and mounted with a tinted lithographed paper behind, having artistic shading or "hatchings," made to bear a general resemblance to the ordinary style of crayon drawings. Colour may, if desired, be introduced. Examples of recent work of this character were shown at the Society's Exhibition. At the last meeting was read a paper "On Platinum-toned Transparencies," by Mr. Thomas Kay; and the description of a mode of producing "Compound Negatives" was given, with illustrations, by Mr. E. Dunmore. Mr. Dallmeyer offered some remarks on Angular Apertures of Rectilinear Lenses; and Mr. Pritchard, besides describing the *atelier* of M. Reutlinger, pointed out a promising direction of photographic enterprise under the head of "Minor Applications of Photography."

Amongst other subjects which have engaged the attention of the Society during the past session may be enumerated the "Parchmentizing of Photographs by Treatment with Sulphuric Acid;" the Use of India-rubber as a Mounting Material; Photo-lithographic Reproductions by Mr. Griggs and Mr. Brothers, an example executed by the first-named gentleman being distributed to the members attending the meeting; Mr. Beckley's Photographs of the Sun's Disk, showing the progress of some dark spots; Irish Landscape Studies by Mr. Payne Jennings, and Photographs taken in Egypt by Mr. Frank M. Good. Prints upon Obernetter Paper were shown by Mr. Solomon; Photographs on Ceramic Surfaces by Messrs. Schmerl and Ellis; and, finally, the Prize Prints of the Amateur Photographic Association.

Allusion has been made to certain original communications which first appeared in the Society's Journal; besides those already mentioned, may be noted the following:—"On Quinine as a Non-actinic Medium," by Mr. J. Spiller. This paper was intended to controvert a statement put forward by Prof. Morren in the *Comptes Rendus* of the French Academy, and proved that no reliance can be placed in the use of a cell or bath of sulphate of quinine for intercepting the lower chemical rays of ordinary daylight. "Uranium as an Intensifier" has been critically examined, and its use practically abandoned in consequence, by Mr. Jabez Hughes and Dr. Anthony. Mr. England initiated a discussion as to the best method of treating the printing bath for the removal of its organic impurities. "Dry-plate Photography in 1869," "Our Printing Processes in the Future," and "The Permanence of Carbon Prints," form the subjects of speculations by Mr. Samuel Fry, Mr. Pritchard, and the Editor respectively: whilst correspondence on the principles of Artistic Copyright appeared from the pens of Mr. P. Le Neve Foster, Dr. Liesegang, and others. A chemical paper, by Mr. Spiller, describes "The Action of Nitrate of Silver upon the Chloride of Gold," and hints at the possibility of preparing a sensitive surface for printing, which does not require a supplmentary toning process. Mr. Stephen Thompson favours us with "Notes on the Recent Exhibition," and Mr. Crookes sends a "Note on the American Eclipse Photographs," wherein he indicates that a stereoscopic examination of pairs, taken at short intervals of time, shows that the corona and prominences really belong to the sun, for the limb of the moon appears to be projected far in front of them. Besides the foregoing, there is an account of Messrs. Goupil's establishment at Asnières, wherein Mr. Woodbury's process seems to have found a permanent home. New features in the Journal are the home and foreign reports, which appear monthly, and are intended to keep the reader *au courant* with the contemporary photographic press; and during the past year the Society's proceedings have been briefly reported in the *Athenæum*, *Nature*, and *Scientific Opinion*, besides the fuller accounts which always appear in the journals specially devoted to photography.

The November exhibition, which the council feel now disposed to regard as a permanent institution, came fully up to the standard of former efforts, both in excellence and quantity, and proved on this occasion to be less burdensome to the funds of the Society than heretofore. Reserved to the members and their friends only on the first evening, the galleries were subsequently opened to the general public, who visited it so eagerly that it was judged expedient to prolong the original period of one week by extra ten days. No charge was made for admission, but a considerable sum was realized by the sale of catalogues, which formed part of the Journal for November. It is impossible to state the number of works exhibited; but there were as many as 128 exhibitors, and a few contributions were received from foreign sources, amongst which the Albertypes, Marion's carbon prints, and Reutlinger's portrait-album call for special mention.

The Society has had to mourn the loss of two members, Sir Thomas Maryon Wilson and Mr. J. B. Hockin, besides receiving intelligence of the death of the Rev. John Barlow and of the veritable founder of the Society, the late Mr. Roger Fenton. Obituary notices in all these cases have appeared in the Journal. Very few resignations have been received, whilst, on the other hand, no less than thirty-one new members have been elected during the past year. At the present time the number of members may be stated as amounting to 243 (against 220 last year), and it is proposed to issue a revised list of names and addresses with the March number of the Journal.

The council notice with regret the dissolution of a useful, and at one time active, auxiliary of this Society, which has existed for more than twelve years in the metropolis under the title of the North London Photographic Association. This loss has, in a certain sense, been compensated by the establishment of a Photographic Society in Bristol, which is already doing good work.

During the past year the council felt it incumbent upon them to make a representation, on behalf of the Society, to Lord Westbury, relative to a Bill presented by his Lordship, and entitled the "Fine Arts Copyright Consolidation and Amendment Act," some of the provisions of which were considered as injuriously affecting the interests of photographers. After having passed the second reading in the House of Lords, and been subsequently referred to a committee, the Bill was withdrawn.

With regard to presentation prints, that of Messrs. Robinson and Cherrill, "Watching the Lark," which was in course of distribution at the date of the last anniversary, has been supplemented by the portrait of the late Mr. Claudet, taken by the topaz lens, the limited issue (fifty copies) of Mr. Griggs's photolithographic reproduction of an old print by Rubens, and a portrait of the president recently presented by Mr. Mayall. Other prints have been kindly offered by Mr. England and Mr. Good, to be placed at the disposal of the Society during the current year.

The financial position of the Society is improving, this subject having occupied much attention on the part of the Council during the past year. A Finance Committee, with Dr. Mann acting as Secretary, was early appointed; several meetings have been held, and in the report recently presented to the Council certain recommendations have been submitted, which, if carried out, will have the effect of considerably reducing the expenditure, without impairing the efficiency of the Society. Foremost amongst these recommendations is a proposal to limit the issue of the Journal to the eight months constituting the business session, confining it chiefly to the publication of our own transactions, with brief notices of improvements made at home and abroad, and important announcements when necessary. In the event of such proposed changes being adopted, a very considerable saving will be effected by reduction of the cost of printing and editing, and the Society will still retain all the advantages of a medium of direct communication with its members.

PRINTS AND THEIR PRODUCTION.

BY S. T. DAVENPORT.*

Photo-Galvanography.—Previous to the invention of the photo-galvanographic process by Herr Paul Pretsch, no satisfactory permanent prints in carbon had been obtained by means of photography; nearly all, with the exception of the Daguerreotype image, being prints consisting of the salts of silver, and especially the nitrate of silver, which had been decomposed in the body or upon the surface of the material upon which the image was produced by means of the camera; and as the visible image was developed by the combined action of several agents and reagents, it was difficult to entirely neutralise or remove them from the print, and a destructive action was constantly ready to be set up within the print itself, by the absorption of moisture by the salts of silver, or by the presence of sulphurous gases in the atmosphere, which attacked and decomposed them. To obviate this fugitive character, and to give permanence to the photographic print, was the object of many inquiries. Carbon was known to be indestructible, but how to incorporate carbon with any known substance used by the photographer, and obtain by its means the brilliancy of light and shadow seen in the silver print, was not known. The first step in the solution of this problem had, however, been taken by Mr. Fox Talbot, in the use of bichromate of potash and gelatine as an etching-ground; and the second was taken by Herr Paul Pretsch, who availed himself of the established fact that bichromate of potash and gelatine in combination, when acted upon by light, changed its nature to a greater or less degree in proportion to the intensity of the light's action; and he developed a means by which the collodion image, either positive or negative, could be impressed in the gelatine, and then converted into an image in relief. By the electrotype process he then obtained a copper plate, from which the first saitsfactory impressions from carbon or printer's ink were produced. He says, in a paper read before this Society:—"My invention consists in adapting the photographic process to the purpose of obtaining a raised or sunk design, on a glass or other suitable plate, covered with glutinous substances mixed with photographic materials, which design can then be copied by the electrotype process." The plates thus obtained by Herr Pretsch possessed many of the qualities so much desired. The image was truthfully reproduced, with all its gradations of light and shadow, and the print was permanent; but the printing surface was far from durable, and the cost of printing was a heavy charge on the product obtained. Moreover, there were many difficulties and much uncertainty involved in the production of the copper plates, and, doubtless, the want of certainty and facility of production, added to the ready wear of the surface when obtained, caused this process soon to be given up. I may add, that Herr Pretsch endeavoured to avoid the coldness of effect due to printing with black ink, not merely by using a pigment of a more agreeable tone, but he also obtained a certain amount of artistic effect, where black ink was used, by taking the impression upon prepared paper, which I may describe as a Creswick's tint, thus securing light and warmth in the foreground, a tint for the middle distance, and a sky, the want of which, in landscape photography, till recently, has been one of the deficiencies of that art.

Woodbury Type.—Nature-printing, on which the invention of Mr. Walter Woodbury is based, was discovered in this country, in 1849, by Dr. Ferguson Branson, and it became known in Austria about the same date. In Austria its great powers were first and most fully developed. It is a method of copying natural objects by embedding them in metal plates, gutta-percha, or other substances, by pressure, by casting moulds from the objects themselves, or, in some instances, partially decomposing, by means of acids, the object to be copied. Thus, a metal plate is obtained either directly or by electro-deposition, from which plate impressions can be obtained by the ordinary process of copper-plate printing. Mr. Woodbury, like Herr Pretsch, avails himself of the fact established by Mr. Fox Talbot, and employs gelatine in combination with bichromate of potash. Having obtained the photographic image in relief, by dissolving out the soluble portion of the gelatine, he imbeds the insoluble portion by pressure in a metal plate, but instead of using the plate to print from in the usual manner, he employs it as a die or seal to distribute a mixture of gelatine and carbon, the colour and amount of the carbon being regulated according to the nature of the object and the effect sought to be obtained.

Thus, after the first gelatine image has been obtained by the action of light, all subsequent prints are procured without the aid of light, by a mechanical process, and in a material indestructible under ordinary atmospheric conditions. The process has been introduced into France by Messrs. Goupil and Co. Mr. Woodbury's original communication to the Photographic Society of London, in 1865, as also a second paper on the same subject, read during the present year, will be found in the pages of the Photographic Society's Journal. In England, the process has been carried out under the superintendence of Mr. Woodbury himself. The prints obtained by this process are full of vigour and rich in colour, the gradations from light to shadow are delicate, and the texture and surfaces of objects are rendered with all the truth and precision observable in an ordinary photograph. This process has rendered photography an available and permanent commercial product, the impressions being obtainable in our climate, and as readily printed during the fogs of November as prints from an ordinary type.

(*To be continued.*)

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* Continued from p. 80.

Correspondence.

GALLIC ACID IN COLLODION.

Sir,—When I penned my article on instantaneous photography, it was not with any desire to enlist the services of merely spasmodic experimentalists. Men who succeed have worked hard to gain their successes. Writers who erect beacons have failed, and conquered failures, or they would know but little of ruling causes. Perseverance is the true secret of success; and, without an exercise of stubborn perseverance, nothing worth having can be gained.

"In my hands such and such a process is a failure." "This collodion doesn't answer." "That developer or toning solution imperfectly acts." How frequently do photographers state their experience thus! I have but little sympathy for those who fail exceptionally, for is it not reasonable to suppose that a process which proves a success in the hands of one person might be made equally successful in the hands of all? I can understand the mechanical skill of one individual to be greater than that of another, but when the matter rests with chemical mixtures I am at a loss to comprehend why chemical results should materially differ if the operations are conducted accurately.

In my own experience as an experimentalist I love failures, and am always best pleased when I meet with them in the earlier stages of trial, because an investigation of the causes which lead to failures usually imparts a full knowledge of the principles which belong to permanent success.

With reference to the addition of gallic acid to the collodion, I simply alluded to this matter as a guide to a more extended research. Were my opportunities equal to my desire I would not allow so important a matter to rest, for I am persuaded that gallic acid is the best of the many agencies we have at command to increase rapidity of exposure. I do hope, however, that the subject will engage the attention of some experimentalist who can move with resolute will from failure to failure. The task of trying might prove long and wearisome; yet success in the direction aimed at would soon remove the last barrier that stays the progress of photographic art.—Yours truly,

W. T. Bovey.

PS.—I enclose another print from a negative taken about the same time and by the same means as the former example was printed from. The subject proves, more forcibly than words, that rapidity was requisite.

[The picture which Mr. Bovey encloses in his letter is a group of children and nurse, and a dog. The positions all indicate ease and absence of rigidity or control, and suggest the necessity of rapidity. Chemical experiments conducted with the same materials and in the same manner should produce the same results; but, in almost all the preparations used by photographers, complex and uncertain conditions frequently exist, and hence, especially in the experimental stages of any process, much patience is required to deal with varying results. If collodion were an absolutely certain compound, if the nitrate bath were stable instead of slightly changing its condition with every plate inserted; and if various other conditions were absolute, we might hope for precision in the first experiments of any well devised process. As matters stand, patience, perseverance, and intelligent observation are necessary adjuncts to success.—Ed.]

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Proceedings of Societies.

South London Photographic Society.

The usual meeting of this Society was held on Thursday, the 10th inst., the Rev. F. F. Statham, M.A., F.G.S., President, in the chair.

The minutes having been read and confirmed, Mr. H. Gorfin was elected a member of the Society.

A letter from Mr. J. R. Johnson was read, regretting his inability to attend the meeting to read a paper on recent improvements on the carbon printing process, but promising that at the March meeting of the Society he would be present, and both read the paper referred to and also show in full operation before them the whole process of carbon printing. If, in consequence of illness or otherwise, he should be unable to attend personally, it would not interfere with the reading of the paper and the demonstrations, which would be conducted by a competent person.

Mr. Croughton exhibited a capital desk for retouching negatives upon.

Mr. W. H. Price exhibited a manipulating camera that he had had constructed for working the wet collodion process in the field without the aid of a tent or other dark box, which appeared to be very ingenious and efficient. The chief difference between this camera and others of a similar kind which have been introduced, consisted in the fact that in this the bath was movable instead of the plate, the latter remaining *in situ*, whilst baths containing silver and developing solutions moved up and down to excite and develop.

The question for discussion then taken, was "Which is the best method of combining natural backgrounds and foregrounds with portraits?" And some fine examples by Captain Tod, of Cheltenham, and Mr. Edge, of Preston, were exhibited.

Mr. J. T. Taylor exhibited some specimens by Mr. Parry. Mr. Taylor could not give certain definite information as to their production; the means by which these specimens had been obtained had not been divulged, but he would read a communication he received from Mr. Parry, and published some time ago, as follows:—

"The method adopted before perfecting my double-printing apparatus was as follows:—I took a glass plate (quarter size, or larger), and, having well cleaned it, coated it with a *thick* solution of india-rubber. Having dried the india-rubber, it next received, in the dark room, a coating of Mawson's collodio-chloride of silver. A print (from the negative with the figure on) was obtained by superposition on the collodio-chloride film. The print was then taken into a weak light, and, without toning or fixing, the outlines of the figure or figures were carefully gone over with a camel's-hair pencil, charged with a mixture of negative and Bates's black varnish. After the varnish was perfectly dry, a very weak solution of cyanide of potassium was washed over the plate, which entirely removed the collodio-chloride film, leaving the outlines in black varnish on the india-rubber coating. It was afterwards well but carefully washed, to remove the cyanide, and then dried. There is now on the india-rubber coating an outline of *exactly* the same size as the figure, which only requires to be filled up with black varnish.

"Having now obtained a correct mask, the next thing is transferring it to its position on the landscape negative. This is a very easy matter. Draw a sharp penknife round the plate as near to the edge as possible, to make sure that the india-rubber has no hold on the glass; next insert the knife *gently* at one corner, and the whole film of india-rubber will come off in one piece. Now, take the view negative, which must be a *thin one*, and give it a coating of thin india-rubber; after which take the mask and lay it in its *right* place on the view negative. The two films will adhere tenaciously together; in fact, there is no separating them again. This mask requires no registering marks if the background negative be a thin one, for the print can be easily seen through it. If, however, a dense landscape negative be used, marks will have to be used as guides to placing the mask in its proper place.

"This plan is far more simple than it reads; but its paramount advantage is the obtaining of a correctly-fitting mask. By adhering to the instructions contained in this communication, some of the most perfect and charming results can be obtained in the studio."

Mr. Dunmore referred to the methods which he had already described for producing combined negatives.

After a desultory conversation, in which the Chairman, Mr. Davis, Mr. Fitch, Mr. Foxlee, and Mr. Pearce took part, and in which the various known methods were discussed,

Mr. Wharton Simpson said that the results in question, doubtless, might be produced with care by several of the processes which had been published. One of the difficulties which had been suggested in relation to the examples of Mr. Edge was the fact that the grasses in the foreground were so fine and crisp that it appeared that no process of double printing could mask such fine lines perfectly. Having seen some of the same cards with and without the landscape back-the powder to form a satisfactory image has been applied, that part of the operation is complete. The film is now coated with plain collodion, which is to serve as a means of transporting the image to its final resting-place upon an enamel tablet. Having been coated with collodion, it is placed in a dish containing water slightly acidulated with hydrochloric acid; and after a few minutes the collodion film floats loosely from the glass, bringing the image with it. It is rinsed, and placed in sugar and water, and whilst it floats in this solution a tablet is skilfully placed under it, so as to secure the precise position the image is desired to occupy on the tablet. It is then lifted out of the water, the edges of the film doubled over the back, and *papier Joseph* is gently pressed over it with cotton wool until it is quite dry. It is then immersed in sulphuric acid, which dissolves and removes the collodion film and the bichromate, and, after thorough rinsing, is fit for the muffle, where it is subjected for a few minutes to the proper heat, and a completed enamel picture, which may exist for thousands of years, is produced. This, if necessary, may be coloured by means of suitable ceramic tints, and again burnt, and a coloured enamel portrait so secured.

We have here briefly indicated the operations to show their extreme simplicity; but brief as we have been, the operation of describing is longer than that of producing an enamel picture, and one personal lesson will make the matter as easy and facile as can be desired. Everything ready for use, from the solutions to the muffle, is kept by Mr. Solomon, and a complete equipment may be had for a sum considerably less than ten pounds, a circumstance which fully justifies, we think, our statement, in another article, on the facility and cheapness with which professional photographers might legitimately extend the range of their usual business. We shall probably, another week, give a few hints on the subject of Herr Grune's mode of enamelling, which is, as we have said, even more simple than that described, and by which very beautiful results may be obtained.

FLUORIDES IN PHOTOGRAPHY.

As a pendent to our recent remarks on the fluoride of silver, we reproduce some interesting remarks made by Professor Tillman at a recent meeting of the Photographic Section of the American Institute of New York, as reported in our Philadelphia contemporary. Dr. Vander Weyde having mentioned a report that fluorine had been successfully used in photography in Europe,

"Professor Tillman remarked that this statement brought up a very interesting question touching the part played by the halogens in actinic action. Some time since, before this Society, he had endeavoured to show, from theoretical considerations alone, why bromine, when used with certain iodine compounds, should increase the chemical action of light. Similar considerations had led him to conclude that the salts of fluorine would not be beneficial in producing like results. In addition to those considerations, it may be stated that fluorine exceeds even oxygen in its affinities, and is, therefore, to be regarded as the most powerful of the electro-negative elements. Indeed, it is still doubtful whether fluorine has yet been obtained in a separate state. M. Pratt, of France, and others who claim to have isolated fluorine, describe it as a colourless gas, and there is good reason for believing that this, like the gaseous elements of less atomic weight—namely, hydrogen, nitrogen, and oxygen—is devoid of colour. The atomic weight of fluorine is 19; taking the remaining halogens in the order of their atomic weights, we find that chlorine (35·5) is a yellowish gas; bromide (80) is a liquid yielding deep-red fumes; and iodine (127), is a solid, which, when subjected to heat, becomes a violet-coloured vapour. From these facts we may infer that the forces which fix their atomic density prevent these elements from being equally affected by all the undulations producing white light. In the case of chlorine the rate of its molecular motions corresponds with that of undulations which produce a certain yellowish tint in the solar spectrum. Iodine, the element of greatest density, has a rate of molecular motion corresponding with that of the most rapid undulations which show their effects in the visible spectrum. On the other hand, bromine, which in point of density stands intermediate between chlorine and iodine, has a rate of molecular motion corresponding with the slowest undulations which produce the impression of red. It is evident, therefore, that the rate of molecular motion does not depend alone on density; and we are confirmed in this opinion on finding that either of the colourless gases, when increased in density by subjection to pressure, do not undergo any changes of colour. Yet the fact remains, that the two electro-negative elements, either of whose atomic weight exceeds that of any other metalloids, and of a majority of the metals, are the most effective agents, next to silver, in the hands of the photographer. Another singular coincidence may be mentioned here: the atomic weight of silver (108) added to that of fluorine is exactly equal to that of iodine. There are many chlorine compounds which are influenced by light; the most sensitive of these are combinations derived from organic compounds. Here is a field, yet unexplored by the photographic chemist, which may hereafter yield abundant fruit."

Dr. Vander Weyde said the statement read by Professor Tillman regarding the haloid compounds was exceedingly interesting. With regard to fluorine, he should have said that body was used for photographic purposes in combination with oxygen; these two being combined with electro-positive elements.

AMERICAN CORRESPONDENCE.

Intensification—Light for the Dark Chamber—Permanganate of Potash—Presumptive Patent Claims—Our National Exhibition—The Year-Book for 1870.

Intensification.—I have recently had the opportunity of examining and studying a quantity of negatives made by photographers from nearly every section of this country, and I was struck with the extent to which intensification is practised. The majority of the negatives alluded to had been intensified in one way or another; some of them so much so as to destroy all good qualities, and others enough to make them harsh and repulsive. The prevailing idea seemed to be that proper printing density could not be secured unless sulphuret of potassium and bichloride of mercury were made to hide all that had ever been good in the negatives. The effect, of course, is, instead of delicate gradations, inky blacks and chalky whites. I know what a temptation there is to intensify, especially when the subject wants "nice black hair, and a clean white face." I know, too, that it is just as easy to get into the habit of intensifying as it is to acquire any chronic habit; but the truest and best method is, not to intensify at all, unless it is absolutely necessary. Transparent, thin negatives give just as much—aye, more—detail than dense ones, and are just as easy to print when one understands their nature and knows how to treat them. The day is coming, I trust, when photographers will understand this. If the truth were known, I believe, the practice is followed more to cover the faults of bad and careless manipulation, than with a desire to make the negative better. Like a coat of black varnish upon a rough casting, it improves the looks for a time, but the imperfections will show still, if not in the negatives, assuredly in the prints therefrom.

My object now is not to offer formulæ for intensifying at proper times—they are too well-known to need repetition. I only wish to urge the necessity, the advantage, and the credit it is, so to speak, of producing first-class negatives without doctoring them; of building a house without props, and a steeple without stays. Use your developer, live up to all the privileges it gives you, and, as a rule, do not intensify if you can help it. It is a bad habit.

Light for the Dark Chamber.—This subject is attracting a great deal of attention at present in this country, on account of the difficulty of obtaining a quality of yellow glass suitable for the purpose. Yellow glass is usually used here, but it is hard to get it uniform in colour, a dozen lights often being of quite as many shades. That fact makes it necessary to add curtains inside also, which must be drawn over the glass during development, and then thrown aside during the other manipulations. The readers of the News have been regaled with several interesting papers on this subject, yet still a real good and easily procurable substitute for bad yellow glass has not yet been found. Mr. Lea's suggestion of green glass I have not yet tried. It will certainly be most agreeable to the eyes if it can be found readily of the proper shade.

Mr. Tryle, of Alabama, writes me that he finds a solution of bichromate of potash to answer admirably. The solution is in a vessel half an inch thick. He develops close by the light, and even when the sun is shining upon the solution there is no trace of fog upon his plates. Very well that, for warm climates; but where the solution would be apt to freeze, it would not answer at all. There is a field here for some one to work and immortalize himself in, by discovering something cheap and easily procurable, by means of which the dark room may be lighted.

Permanganate of Potash for Rectifying the Nitrate Bath.—You have conferred a great boon upon photographers by your recommendation of so practical, easy, and simple a cure for the ills which the nitrate bath is heir to. So long as the dear public will be imprudent, so long will it be necessary to have the services of a physician; and so long as the photographer will ill-treat, over-work, and abuse his nitrate bath, so long will he need some method of curing the diseases which he surely creates. Permanganate of potash, then, even in homœopathic doses, is a most active and efficient cure-all, as many enthusiastic correspondents testify. I have a letter before me which tells of a wonderful cure of a bath of 140 ounces in bulk, which, by over-exertion, had been reduced to thirty grains in strength, and was full of that disease which causes pinholes. It was filled up to its wonted bulk, 160 ounces, filtered, and, on being tested, was found "decidedly acid." One drachm of a saturated solution of permanganate of potash was added; the bath was exposed then to sunlight three hours, then carefully filtered, and enough nitrate of silver crystals added to make the solution forty-five grains strong. Next morning it was tested, and found to be neutral, no trace of acid being present. "Now," says the astonished correspondent, "what became of the acid?" He theorises briefly thus: "Nitric acid is taken up by manganese; manganic acid thus formed is taken up in coagulating or precipitating the organic matter present; and the bath is neutralized and purified."

His theory, however, is all wrong, as your frequent explanations have made plain. Organic matter in a neutral solution of nitrate of silver exposed to the action of sun-light is decomposed, and an oxide of silver precipitated. This cannot take place when an acid is present. The permanganate of potash, which always contains an excess of alkali, neutralizes the acid contained in the bath, and hastens, also, the action of the sun by its own decomposing properties; and it is astonishing what great results a very little of it accomplishes in a little time.

Let not this fact, however, induce photographers to abuse and over-work their baths. The best plan is to have two solutions, and to work them alternately, say a week at a time. Those who have not tried this plan will be surprised how little they will be annoyed with a disordered bath, if they adopt it. It is far preferable to working and working a bath until it becomes disabled, and then having to stop everything until it is cured again,

Presumptive Patent Claims.—While I do not wish to intrude upon the readers of the News matters that do not interest them, yet, believing they sympathise with us as members of the same fraternity, I mention that in the country of the United States at present two important photographic patent cases are being contested. The greatest grievance is, that neither of them should ever have been given. In this country, the fact of a party having letters patent granted him is of no value if other parties choose to contest his claims. Nothing less than the decision of the supreme court will settle a patent cause, if the contestants choose to carry it that far. In the present instance, that is being done. One of the patents alluded to is for multiplying pictures upon a plate by moving it over the field of the lens in a certain way. Not content with his way, however, the presumptuous and unwise patentee claims that all who make more than one picture on a plate, by any method whatever, are "infringers" upon his patent, and, therefore, liable to prosecution. This gentle and modest claim is, of course, resisted, for where is the old photographer that has not used a sliding plate-holder since years ago? Resistance meeting this absurd claim on all sides, the patentee is forced to bring suit against *some* one, to bring his cause to a test; and now the interesting contest is going on.

Another ingenious (?) photographer has obtained a patent for hanging a bag of protosulphate of iron half way down a box with a partition in the middle, in which waste solutions are run and precipitated. Becoming insane over his pretty plaything, he is seized with the original idea that "all photographers who save their washes by precipitation, no matter what the means, are *infringers* of his patent;" and, forsooth, he selects a one-eyed, one-armed photographer as his test victim; and that case is also going on. I mention these to show you what the craft has to bear in this free country, and that if any of our older *confrères* can give us any evidence of value, it will be gratefully appreciated.

Our National Exhibition.—I have before expressed a hope that many of the charming pictures which you have described to us as being at the Conduit Street Exhibition in London will be sent to our forthcoming National Exhibition. May I not repeat this hope, and tender a cordial invitation to the late exhibitors to command me if I can be of service to them in the matter? Many, very many, Americans visit your country every year, and they generally have pictures made, so that notoriety here will not injure English photographers. The arrangements of the Executive Committee are completed now for receiving foreign packages. All such should be marked—The U. S. National Photographic Exhibition, care Edward L. Wilson, Secretary, Philadelphia, *via* Cunard or Inman Line of steamers to Boston. Two invoices of each consignment should be sent. Thus much to prepare the way, and more anon.

The Year-Book.—While we now have our *Mosaics*, and the other English, French, and German photographic annuals, we could not get along without the parent of them all, the Year-Book of Photography and Photographic News Almanac. It comes to us this year fuller and fresher and better than ever before. Reading it is like reading one's notes of a journey after returning home. It brings up to mind all the by-gones and pleasures and topics of the photographic year past, and gives us a concentration of the best in a most acceptable form. How it has grown since its birth! And now it has attained its full size, each year it grows richer and better. Old matter seems to have had no chance for space here, for there is so much new. The articles from such men as Messrs. Hughes, Robinson, Mayall, England, Blanchard, Swan, Cherrill, Dallmeyer, Woodbury, Rejlander, Gordon, and hosts of others, must insure it an immense circulation; and—it may be a secret, but your readers ought to know it—a photo-printing house in this country are in daily expectation of receiving one thousand copies of it, which they say will circulate rapidly. Its Editor shall never be forgotten for his great labour in presenting us every year so much good and useful information. Most aptly does the Editor of the Photographic Society's Journal call him the "Whipper-In."—Truly yours, Edward L. Wilson.

Philadelphia, February 1st, 1870.

PRESERVING PRINTS FROM DISCOLOURATION DURING LONG EXPOSURE IN THE PRINTING FRAME.

BY J. GRASSHOFF.

[In a private letter, M. Grasshoff assures us that not the slightest change in the purity of the whites is observable after an exposure of three days, when the precaution indicated is taken.—Ed.]

Even the best and most practised of operators are not infallible, and it therefore happens, occasionally, that a negative is over-exposed, and an opaque film obtained. If the advent of winter is at hand, with its dull foggy days, the printing of such negatives is a matter of very prolonged duration, and the results are often so yellow or discoloured as to be almost useless. Many methods have been devised for preserving the silvered paper in a fresh and white condition; but I have tried but few of them, owing to their complicated nature. Our ordinary method of printing requires that the paper should remain white in the pressure-frames for a period of three or four days, and waxed paper laid behind the sensitized surface has hitherto proved to be a good protection against discolouration. Printers, however, are apt to handle this protective material, which is often thin and brittle, in a very rough and ready manner, and the consequence is that countless flaws and holes are produced, which give rise to spots and stains upon the toned and finished prints.

It occurred to me that in some of the pressure-frames where no waxed covers were used the paper preserved its purity more perfectly than in the others. More striking yet were the appearance of certain pictures behind which a pad of printed paper had been placed, and in which the printed matter was reproduced in white upon a yellow ground. The explanation of this appeared to me to be that all descriptions of paper, whether printed paper or filter-paper, absorbs moisture, and this, acting upon the silver surface, causes rapid decomposition, and, therefore, yellow spots. This is particularly observable when printing in the open air in damp weather. The greasy printer's ink repels the moisture, as does, likewise, the waxed paper, and the sensitive surface thus preserves its pristine whiteness.

Waxed paper, however, soon becomes injured, the small flaws and holes in it causing imperfections upon the prints, and for this reason I discontinued my experiments with the material, and tried, instead, a black waxed fabric. Two descriptions of this material, American cloth, were produced, both exceedingly smooth, one being of a thin and cheap kind (prepared from a thin gauze-like linen), and the other of a better character, costing about four times that of the former, and prepared from a densely woven fabric. A quarter-sheet print, toned, was placed face downwards, and covered with a strip from each of the cloths in such a manner that a small space of uncovered paper divided the two materials, and allowed the free action of the light to be observed. The picture was exposed for three days and nights in a warm room in an almost obscure corner, in order to retard the action as much as possible, it being transferred to the open air on the third day, in a moist atmosphere. One-third of the pressure-frame lid was covered with plush, another third with a thickness of filter papers, and the remainder was unprotected wood. The result was very simple; in all places where no waxed cloth was present the picture had assumed the well-known orange-yellow tint, and the pads of plush and filter-paper had exerted scarcely any influence whatever. The services rendered by the two kinds of waxed cloth were very marked; that part of the paper covered with the thick black material had retained its white tone perfectly, while the other portion of the paper covered with the thinner material had assumed a light yellowish tint.

I now proceeded to obtain a trial print with each description of material in the open air in a damp atmosphere; after two days the sensitized paper under the thin cloth was perfectly unserviceable, while the thicker cloth preserved the paper in good condition for a period of three days.

From these results we may judge that the cheaper descriptions of waxed linens receive one or two preliminary coatings of glue or size before being treated with the oil or wax compound and varnished; such is more especially the case in coloured cloths got up at a very cheap rate. The thick film of gelatine or glue attracts moisture, and, therefore, exerts a much less protective action than the thicker material. No injurious effect upon the print is perceivable by the employment of this particular waterproof cover, and its use may, therefore, be recommended. Freshly silvered paper may be kept in a serviceable condition in a waterproof cloth case for two or three days in summer, and in winter for four or five days.

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ON ERRORS OF PERSPECTIVE IN PORTRAIT PHOTOGRAPHY.

BY DR. H. VOGEL.*

Besides these reproductions, two others were obtained under the same conditions, at sixty and eighty inches distant, and on placing these beside one another it was at once apparent that as the distance was increased, so the head became fuller, broader, and more solid, the line at the summit of the bust inclined more deeply, the pedestal ellipses became more open, the breast increased in breadth, and the arm-pieces stood out more prominently. These differences may even be remarked when models are reproduced at different distances with the same apparatus.

I obtained a negative of the Apollo bust with a Dallmeyer stereoscopic lens, at distances of five and ten feet, the image taken at the latter distance being, of course, only half as large as the other one. The contrast in the pictures was inappreciable at first, owing to the small size of the lesser picture, but on enlarging the latter a marked difference between them was remarked.

From the above we see, therefore, that different distances produce widely different effects of the same object, in the same way as different methods of lighting will also vary the character of a model. Many may be of opinion that this is, after all, a matter of but small importance, for it is to them quite immaterial whether Apollo is depicted a little fuller in the face or not. In Apollo it may indeed be a matter of indifference (seeing that not a few people are quite ignorant of his features altogether), but it is quite otherwise in portrait photography when we have to do with this same class of observers. In respect to their own portraits, ignorant people are exceedingly particular; the smallest trifle—a line, a fold, a lock of hair—is severely criticised, and just those differences which in an Apollo bust they would fail to remark, are at once exceedingly apparent to them in their own portraits.

For this reason it behoves photographers to study attentively the effect of distances in portrait photography; and intelligent and artistic operators will, by this means, find that they have at their command a valuable method of modifying or humouring the character of their portraits. They would not, for instance, commit the mistake of photographing a slim sitter from a short distance, and thus making him appear thinner, or increase the figure of a stout person by operating from afar off. In the production of bust pictures, or of large heads, the effect of distance should especially be studied, as in such instances the camera is, on the one hand, always near to the sitter, and, on the other hand, the portrait (showing only but a small portion of the body) is sometimes as broad as it is high. In full-length portraits, where the breadth is but a slight proportion of the length, these errors of perspective are naturally not so marked.

The questions will, no doubt, be asked: What is the best distance? and which gives the truest representation?

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* Continued from p. 78.

To these queries direct answers cannot be given, for in all cases the distance must depend solely upon the model, as we have just pointed out in the instances of a stout and a slim person, for the depiction of whom different distances would be necessary. As a general rule, painters, when copying an object, recommend a distance from it of at least twice its length, so that for a man five feet high, ten feet would be the most suitable for obtaining a full-length picture, and five feet for a bust or half-length portrait. The painter, however, enjoys great freedom, and can add, leave out, or modify where he likes, his guide being his own artistic knowledge; and this the photographer must also be possessed of as a matter of necessity. Opticians have provided him with lenses of different foci in order to obtain portraits of equal size at different distances, and a well-provided photographer will always have several instruments of different kinds at his disposal, all of which are good and suitable if employed at the proper distance. And in this way we may indeed answer a question which was raised at a recent meeting of the Society for the Advancement of Photography, viz., "What portrait lenses yield the best and most suitable negatives for enlarging?" From what has been said we have seen that a correct lens will give different pictures if employed at different distances; for instance, if I operate at a distance of five feet from the model I obtain a different bust picture from that produced at ten feet. In small pictures the difference may, perhaps, be not so striking, but when enlarged to life-size the contrast is apparent to anyone. Supposing the life-size picture to stand five feet high, we must, according to the academical rule above quoted, place ourselves at a distance of ten feet in taking the model; for if the finished picture is at this distance, to be true to reality the negative employed for enlarging must be taken at such distance, irrespective of the kind of lens used, provided it be a good one; if taken from a shorter distance, the enlarged picture will inevitably be in some respect untrue.

The nature of the object must naturally have some influence upon the proportions to be observed. This will be seen at once if we take, for instance, the case of a goblet; inasmuch as this is an object used for drinking, it is customary to hold it in the hand, either when drinking from, or admiring it, having it at a distance, therefore, of about two feet. A true picture of such a goblet could obviously only be produced in photography by placing the camera at a comparatively short distance, a fact at once evident if an enlarged picture of a negative taken at a long way off is compared with a print of similar size obtained at a nearer point of view. The error in this case is especially noticeable if the vessel photographed is very broad in proportion to its length.

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Recent Patents.

PHOTO-RELIEF PRINTING.

BY WALTER WOODBURY.

The following specification of the patent obtained by Mr. Woodbury in the United States is more comprehensive than that lodged at the Patent Office in this country.

My invention relates to improvements on the "photo-relievo" printing process, which forms the subject matter of previous Letters Patent granted to me, and bearing date at Washington, the 20th day of February, in the year of our Lord, one thousand eight hundred and sixty-six, No. 52,803; and consists, firstly, of a new and useful method of improving and adding pictorial effects to the "gelatine reliefs;" and, secondly, to a new and improved method of obtaining the "metal moulds" or "intaglios" from the gelatine reliefs.

In carrying out the first part of my invention I proceed as follows:—

The original gelatine relief is obtained, in the manner described in the specification of my former patent, above alluded to, the solution of gelatine being mixed with a certain amount of colouring matter, so that when viewing it by transmitted light the full pictorial effect is perfectly visible.

Before removing the said relief from the glass, I take a solution of hot gelatine of the same consistency and containing the same amount of colouring matter as the original mould, and I paint therewith upon the latter any additional shade or pictorial effect that may be desired (keeping the glass warm during the process); and when this additional coating has become dry it will form a relief exactly corresponding with the other parts of the gelatine mould, which were produced by the agency of light. The class of effects most suitable for this process are the introduction of clouds, figures, stronger shadows, &c.

I then take a metal reverse or intaglio from this relief, and print therefrom (as described in the specification of my former patent) in semi-transparent ink.

It will be evident that the gelatine reliefs for this purpose may, if preferred, be made entirely by hand, the artist merely painting on the glass with the semi-transparent gelatine ink until the required pictorial effect is seen by transmitted light.

The second part of my invention, which relates to the method of obtaining the metal intaglio from the gelatine relief, consists principally in producing such intaglios by pressure, instead of by the electrotype process, as previously practised by me.

In carrying out this part of my invention, I take a gelatine relief (after it has been perfectly dried by artificial heat or otherwise) and place it in contact with a sheet of soft metal or alloy between two perfectly even surfaces of steel, and submit it to pressure in a hydraulic or other press. By this means the surface of the soft metal or alloy becomes impressed with the exact counterpart or reverse of the gelatine relief, and the metal reverse thus obtained forms the "intaglio" or mould wherewith to print with the semi-transparent ink.

What I claim as my invention, and desire to secure by letters patent, is—

I. The method hereinbefore described of improving or adding pictorial effects to the gelatine reliefs by painting thereon by hand with a coloured solution of gelatine.

II. I claim producing such gelatine reliefs entirely by hand, as hereinbefore described. And—

III. I claim producing the metallic intaglio from the gelatine reliefs by pressure substantially as hereinbefore described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

Walter B. Woodbury.

PHOTO-MECHANICAL PRINTING.

BY J. VINCENT ROBINSON.

The following specification was only provisionally entered. It describes a method of producing negatives by hand drawing, and a mode of producing surface printing blocks by photography.

The first part of my invention relates to the production of negatives for photographic printing, which I effect in the following manner:—Upon a plate of glass or other transparent material I deposit or affix a layer or stratum of suitable metal (preferably of silver) or metallic alloy, or it may be a preparation of aniline or other suitable matter, upon which metallic or other surface a drawing may be made with pen or pencil. The lines of the drawing or design are then removed by means of a graver, etching needle, or other suitable instrument, or the drawing or design may be at once etched in without the aid of the first pen or pencil sketch if desired. A plate is thus obtained from which the metal is removed in the parts representing lines in the drawing or subject, so as to admit light through the plate at those parts, and obstructing it wherever the metal deposit remains, thus producing what I term an etched negative. A print may now be obtained from the negative by placing it over an ordinary piece of sensitive photographic paper, and exposing to light in the usual manner, or by any of the usual methods of photographic printing.

The second part of my invention relates to the production of raised surfaces for printing purposes by means of the same etched negative obtained in the manner above described. To effect this I coat a plate of glass or metal, or it may be a stone or other suitable material, with a layer of gelatine, gum, or other suitable substance, to which has been added a bichromate, such as bichromate of potash or ammonia, or a mixture of said bichromates, for the purpose of rendering sensitive to light the layer of gelatine, gum, or other substance employed.

The negative before described is placed in contact with the prepared gelatine or other surface, and is exposed to light, ground, it appeared to him that the screen used for a background was graduated from dark at the bottom to light at the top, and the landscape employed was graduated or vignetted at the bottom so as not to interfere with the natural objects forming the foreground in the portrait negative.

This view was acquiesced in, and after some further conversation the proceedings terminated.

Talk in the Studio.

A PRACTICAL MAN.—From a circular just received we learn, with regret, that the subscription for Mr. Fuller, who has occasionally contributed to our pages as "A Practical Man," and to other journals under pseudonyms, lags. The grant from the Royal Bounty of £50 is made conditionally upon the raising of at least an equal sum, which is not yet raised. We learn from Mr. Fuller this week that his sight is all but gone. All subscriptions are to be forwarded to the Rev. R. B. Kinsman, Vicarage, Tintagel, and none, consequently, are acknowledged in these pages; we may mention, however, that Sir S. Glynne has promised £25, and Lord Robartes £10. Those of our readers who can contribute will, we believe, worthily bestow a real benefit.

ROBBERY AT MESSRS. MAWSON AND SWAN'S.—John O'Neil, a porter, was charged at the Newcastle Police Court, before G. H. Phillipson and B. Plummer, Esqs., with stealing a large quantity of photographic chemicals, 2,000 cartes-de-visite, and other articles, amounting in value to about £80, the property of Messrs. Mawson and Swan. The prisoner had been in the employment of the prosecutors for about three years as a porter and warehouseman. He had absconded, but was taken into custody at Belfast on the previous Wednesday, when he acknowledged that he had stolen the goods. Mr. J. W. Swan said that on the afternoon of the 12th of last month he saw O'Neil, and told him they had found he had been robbing them, and he acknowledged that he had. He (Mr. Swan) knew that the prisoner had entered the warehouse by means of skeleton keys, and asked him for them, and the prisoner, in the presence of Mr. Gladstone, took the keys out of his pocket and gave them to him. They had great confidence in the prisoner, and it was a source of sorrow to them when they found out what was going on. The prisoner now pleaded guilty, said he was very sorry, and hoped the magistrates would deal leniently with him. He was committed to take his trial at the assizes.

CAUTION.—We have received a letter from D. B. James and Co., stating that a ten by eight view lens (A. Ross) had just been stolen, having been unscrewed from a camera standing outside the studio door. Photographers will do well to be cautious in purchasing lenses without knowing from whom, and also to avoid giving opportunity for such thefts.

BIFACIAL MEDALLIONS.—We have been favoured by Mr. Hemery with an example of his bifacial medallion, which seems likely to prove a very attractive style of portraiture. The two profiles, one placed partially in advance of the other, after the well-known medallion style, are both quite sharp and well-modelled. We have seen the combined negative, and neither negative nor print show any trace of the mode of joining. As will be seen from an announcement in our advertising columns, Mr. Hemery is now prepared to supply examples, and will shortly, we believe, announce arrangements for communicating his process to the profession.

COMPRESSED GASES.—A correspondent informs us, for the benefit of some enquirers, that compressed gases in wrought iron bottles can be obtained of Mr. John Orchard, High Street, Kensington, W.

PHOTOGRAPHY AND MOONLIGHT.—The *Times* says:—"The publication of Colonel Stuart Wortley's collection of photographs taken by night will make a valuable addition to the portfolios of those who admire this branch of art. The varying phases of the clouds, the sharp contrasts of moonlight, are reproduced in these photographs with such success that we almost expect to see the masses of clouds break up into other fantastic shapes, and the moonbeams burst out through other windows in the screen. In one of the photographs, called 'The Veil of Cloud was Lifted,' we seem to see the dark curtain slowly rising, and, in very truth, unveiling the glories of the moonlit sea. In 'Early Morning,' on the other hand, we are shown the dim anticipations of the coming dawn, just when the gray becomes tinged with colour, and before the first rays of the sun shoot up into the sky. The hard, distinct angles of the jetty which appears in most of Colonel Wortley's scenes offer a striking contrast to the rolling, broken outlines of the clouds. There are also included in the collection some photographs of female heads in character, of which 'Dona Isabel' may be taken as a good representative; but these, although excellent of their kind, do not take our fancy so much as the reproductions of cloud and moonlight effect."

ROMANTIC SUICIDE OF A PHOTOGRAPHER UPON A WIFE'S GRAVE.—An inquest was held lately, at High Barns, near Sunderland, on the body of George W. S. Bigot, who tragically put an end to his existence in the Bishopwearmouth Cemetery, by swallowing a quantity of poison at the side of his wife's grave. It appears deceased's daughter, Sarah Jane Bigot, who was nine years of age at her death, in February, 1866, was born at Auteuil, near Paris. A neat little tombstone is erected to her memory in the Bishopwearmouth ground, surmounted by a cross, in the middle of which her likeness is let in under thick transparent glass. Her name, place of birth, the date of her death, and a scriptural text are on the stone, followed by—"Also, Margaret Jane Bigot, her mother" (who died a few weeks ago in London), and "In the midst of life we are in death." Immediately under the miniature likeness, and preceding the above inscriptions, are the words, "G. W. S. Bigot, 1st February, 1870," and some illegible writing in pencil, supposed to have been written by deceased. When discovered, singular to say, he was lying on his back, in the manner he wished to be laid in the earth—alongside his wife and child. In this position, it is surmised, deceased took the poison, as its effects would be almost instantaneous, and the arrangement of his body was perfect. His hat, with his gloves in it, was at his side. His clothes were of a "shabby genteel" description—all black, but faded. No bottle could be found about the place, but only a broken wine glass, which he must have had covered over till he used it. His handkerchief had some stains upon it, caused by the poisonous fluid. The jury returned a verdict "That deceased died from the effects of poison taken whilst in a state of temporary insanity." Deceased, it is said, was once a French soldier, but had for some years past filled the occupation of a photographer, and was at one time in business, at Sunderland, in that line.

A PHOTOGRAPHER CHARGED WITH WILFUL DAMAGE.—At the Birkenhead Police Court, W. H. Staples, a photographer, was charged with wilfully damaging some pictures, frames, glass globes, and other articles, the property of Adolphe Koenigsberger, a German dealer in pictures, frames, &c., on two occasions. Mr. Staples was also summoned for using abusive and threatening language towards Mr. Koenigsberger, who was charged by the other side with using abusive and threatening language towards Mrs. Charlotte Staples. The complainant occupied a shop under the studio of the defendant. For some time past the defendant had exhibited a bad feeling towards him, because he (complainant) sold carte-de-visite frames. One day last month complainant was told by his shopboy that there had been great jumping on the floor overhead. The jumping commenced again, and it was carried on to such an extent that the whole building shook. The result was that four frames, some pictures, two globes, three pairs of glass shades, and about two dozen cartes-de-visite were thrown down and damaged. He estimated the damage at £4 15s. For the defence it was denied that defendant jumped on the floor for the purpose of causing the damage to the complainant's pictures and other stock, and the only way he could account for any accident was by lifting different scenery about from time to time; and urged that the case was one which ought to be brought before the County Court, and not before the Police Court, where the defendant's mouth was shut. The magistrate thought it would be better for the complainant to take the case to the County Court.

INDECENT PRINTS AND PHOTOGRAPHS.—Charles Grieves, *alias* Young; Samuel Tyler, *alias* Smith; Charles Perry, *alias* Charles Charley; Geo. Jackson; Henry Tozer, *alias* Paul, *alias* Judge; and Wm. Saunders, severally, either pleaded or were found guilty of selling indecent publictaions and photograph slides. The Judge said that these prosecutions by the Society for the Suppression of Vice reflected the greatest credit upon it, and the public were greatly indebted to it, for the mischief done by these publications was incalculable. He sentenced Saunders to be imprisoned and kept to hard labour for eighteen months, Jackson for eighteen months, Tyler and Perry for twelve months each, and Grieves and Paul for twelve months.

To Correspondents.

W. W. sends us some capital examples of winter effects taken on one of our recent coldest days, Saturday, the 12th of this month. The subject consists of boys snow-balling each other, and the grouping and action, the rustic accessories and cattle, all tell well. No. 1 is pretty good, but the movement of the boys, and the somewhat spotty effect of the background, interfere with its pictorial value. No. 2 is exceedingly pleasing, and, notwithstanding the movement of some of the figures, is a good picture. The cattle are very effective, and the composition generally is good. It would make a pleasing picture of about eight by four inches. There is in the strip sent sufficient foreground, but too little sky. No. 3 is also good; but, although sharper, scarcely pleases us so much as No. 2, which is, we think, best pictorially. 2. Much depends on circumstances. A careful and patient man may get very good results with dry plates. Mr. Gordon, amongst amateurs, for instance, has produced as fine pictures on dry plates as ever have been produced on wet plates. Mr. Mudd, Mr. Wardley, and many others, prefer dry plates for landscape work. The gum-gallic process, the collodio-albumen, and the coffee, may all be relied on. 3. Plates treated with golden syrup solution, for finishing at home, do not suffer in any way. Some of the finest examples in the last exhibition were from negatives so treated.

Cymro.—The blinds in any studio must entirely depend on the form and other circumstances of the studio. We cannot advise what system to adopt without knowing, and somewhat precisely, the form, position, dimensions, amount of glass, &c., of your studio. For an ordinary ridge roof studio, we prefer a series of blinds on rollers for the skylight, and curtains running on wires for the side light, a single thickness of white calico, except for any windows through which direct sunlight may penetrate, and for which double blinds may be necessary. Where blinds opening in the manner of those to which you refer are employed, the hinge should be nearest the sitter, so that the light admitted shall pass without hindrance direct to the sitter. 2. A pleasant grey is a good colour for the inside of a studio.

Charbon.—Other things being equal, we prefer a single lens for purely landscape work, clouds, &c. 2. The proportion of hyposulphite of soda required for fixing prints is the same in either damp or dry weather.

B. Magic.—With the exception of a little want of cleanliness, the enlargement you send is not bad, any defects it possesses belonging rather to the negative than to the enlargement. The plan of enlarging direct upon the paper, and that of producing an enlarged negative, has each its advantages. Where several prints are required, the latter plan is perhaps best. Personally, we prefer, both for simplicity of operation and delicacy of result, the plan of producing an enlarged positive image on collodion, and transferring it to paper. If you wish to try enlarging direct on paper, prepare your paper with a solution containing 15 grains of iodide of potassium, 5 grains of bromide of potassium, and 1 grain of chloride of sodium in an ounce of water. Float on a 60-grain silver bath, and develop with a saturated solution of gallic acid.

F. Smith.—The salting solution given in the answer above is a very good one, and will answer for enlargements by means of artificial light. 2. The process of enlarging on paper by means of diffused daylight requires a very long exposure; but you must remember that a condenser is useless, or nearly so, except for sunlight; and if the negative be presented to an open expanse of sky, a reflector is not needed. 3. There is no certain rule. Some use the lime light, and some the magnesium light. Where the process is constantly in use, the former is cheapest; but, for occasional purposes, the latter is much more convenient.

One who Tries.—Perchloride of iron is kept by most chemists. You can get it of any London photographic chemist, such as Rouch and Co., or Thomas. 2. A solution of chloride of sodium would not have much effect on a fixed print unless kept a very long time in it, or the solution were left in it without washing, in which case it would gradually cause some fading. 3. The defect you describe is not uncommon with lenses of very large diameter if they are not made by a first-rate maker. The remedy is to use a stop, and thus cut off some of the marginal rays. This, of course, will somewhat reduce the rapidity. It is important, in seeking a very rapid lens, to obtain it from a very good maker.

A. K. H. (Bermuda).—It is quite possible to photograph the interiors of caves by the aid of the magnesium light. It is best to use a lamp with a concave reflector. The amount of wire or ribbon necessary, and the length of exposure, must much depend on the size of the cave, as the further the various sides of the cave are from the light, the less intense the illumination will become. One or two experiments will best determine this point. The chief difficulty will arise from the rapid accumulation in the atmosphere of the dense white fumes, so that if the result is not obtained in the first two or three trials, it will be necessary to wait until these fumes are dissipated before proceeding further.

Fiat Lux.—Monckhoven's condensers are plano-convex. We do not know the exact focus. A pair of six-inch lenses would answer; the curves must depend on the density of the glass.

George Reeve.—Your general plan is pretty good; but it will be much better to have the room 14 feet wide, and make the south-east side entirely opaque. Then make your top and side-light 8 or 10 feet long, and having 5 or 6 feet opaque at each end. You can then place the sitter at either end, as may be convenient.

E. S. B.—The same chemicals and the same lens may be used for copying as for producing portraits. It is at all times difficult, or even impossible, to get very perfect copies of card pictures, especially if the print to be copied is not a very brilliant one. We should better have understood the defects which trouble you if you had sent us a print from the negative you obtained. To avoid the thinness of image of which you complain, use a ripe collodion, give full exposure, use a weak developer, to which a little gelatine has been added. See formulæ in our Year-Book. We fear that the lens you describe is not of much use for portraiture; and it is not probable that you could get the necessary modifications or additions made to it. Your best plan will be to induce the vendor to take it back at a reduction.

A. B. (Ashton).—Both statements were correct answers to the questions put, stated, however, in round numbers for easy application. There is a considerable difference between the amount of a salt in an ounce, say, of a saturated solution, and the amount of the same salt necessary to be added to an ounce of water to make a saturated solution; and an ounce of water saturated with a salt will make considerably more than an ounce of solution. To state the matter with rigid accuracy, 1·60 drachms of water at 62° Fah. will dissolve one drachm of protosulphate of iron. Instead of 1·60 we stated a little more than 1½ drachms, and the saturated solution so made will be a little more than 2½ drachms. When you have made a saturated solution, 100 drachms of it will contain 37·5 per cent. of the iron salt, or a little more than one-third. You will see that this being so, 1½ drachms of the solution contains about 30 grains, and this quantity added to 6½ drachms of water would give you a 30-grain solution. 2. A dish which has been used to hold hypo solution usually becomes so saturated with that salt that it is unfit for any other purpose. 3. The manual to which you refer was published in America. It has not been published in this country, and we do not know whether it is in print. It may, probably, be had through Trubner and Co.

E. K.—The position for the stop in a portrait combination is determined by the relative foci of the front and back combination. Suppose, for example, the focus of the front lens is six inches, and that of the back lens twelve inches, and the distance between the lenses three inches, the stop will be placed one inch from the front lens and two inches from the back lens. In this position it best corrects distortion. If, however, flatness of field be required rather than freedom from distortion, the stop should be placed nearer still to the front lens. 2. For card pictures a lens of about eight inches focus will give the best results.

Z. H. A.—The collodion of almost all the good and well-known makers is comparatively structureless. We have seen some of Rouch's very free from structure. 2. Black curtains are not usually necessary. They are only used to increase depth of shade in rooms admitting a large flood of light. It is useful in rooms where the portion over the head of the sitter is glass. Strong black calico, or "union," will answer.

Dry and Wet.—The term "blurring" has been somewhat inappropriately applied to an effect produced by reflection from the back of the plate. It occurs where a very strong light is present, like a window in an interior, or the sky beyond dark foliage. If the film be somewhat transparent, the light passes through, and, being reflected at an angle, produces a spreading of the light with a graduated edge. It always occurs, if at all, during exposure. The plates may be backed at any time before exposure. 2. Bromized plates may be treated with Mr. Gordon's gum preservative. 3. The rapid rectilinear is more rapid than an ordinary landscape lens, because it may be used with larger aperture. 4. It is not absolutely necessary to have a substratum, but it prevents the risk of the film slipping. You may make it yourself. There is no danger in making a solution of india-rubber in chloroform, but to some persons it is inconvenient to use, on account of the fumes.

W. W.—We have never found a collodion plate covered with bubbles on removing from the silver bath. Are you sure it was not the sandy looking deposit arising from excess of iodide of silver in the bath? This might present the appearance of minute bubbles, and would cause pinholes. The cure is diluting and filtering, according to instructions often given, and repeated in our last Year-Book. Thanks for information.

Expectant.—Obtain Mr. Hughes's Manual of Instruction, get all the issues of our Year-Book which you can, read the Photographic News, practise carefully, and write to us for solution of your difficulties when they arise.

A. Johnston.—Thanks. Second specimen just arrived. It is very excellent.

G. Jones.—Received. We shall test, and report shortly.

Received: Reports of the Total Solar Eclipse of August 7th, 1869, and Photographs of the same from the U. S. Naval Observatory.

Several letters and articles in type are compelled to stand over for lack of space.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 600.—*March* 4, 1870.

CONTENTS.

PAGE
Photographs of Prisoners 97
Critical Notices 98
Gleanings from Daily Work. By Stellar Polaris 99
Gallic Acid in Collodion as an Accelerator. By S. Beverley .. 100
On the Practical Value of Dry Plate Processes. By A. Moll ... 101
Filtering Collodion. By M. Carey Lea 102
After-Intensifications of Portrait and Landscape Negatives. By John C. Browne 102
Correspondence.—Rambles amongst Provincial Studios—Vignetting—Reducing Intensity of Negatives—Gallic Acid in Collodion—Photography in Dull Weather—Photo-Mechanical Printing—Recovering Gold from Old Toning Baths—Photography and Moonlight 103
Proceedings of Societies.—Liverpool Amateur Photographic Association—Oldham Photographic Society—Amateur Photographic Association — French Photographic Society — Photographic Exhibition at Manchester 105
Talk in the Studio 107
To Correspondents 108
Photographs Registered 108

PHOTOGRAPHS OF PRISONERS.

Photography as a means of identifying criminals is henceforth to be introduced into all prisons as a necessary part of the prison routine. The practice which has been found so efficient for many years, in its partial application, by intelligent and zealous governors of gaols, will henceforth come into general operation. A select committee of the House of Lords, on whose report the Prison Discipline Act of 1865 was framed, strongly recommended the adoption of photography as a means of identification, and pointed out the especial advantages to be gained by its aid; but for some unexplained reason the Home Secretary then in office did not see fit to adopt the recommendation, and, except so far as it has been with many governors a voluntary work, photography has not until now been employed as a recognized mode of identifying criminals. Mr. Secretary Bruce has, however, now determined to secure materials for a national "rogues' gallery," and taking off the face of a prisoner by means of the camera will become as much a matter of course as cutting off his hair. The letter issued from the Home Office is as follows:—

"Whitehall, Feb. 9.

"Sir,—It being considered necessary, with a view of establishing the means of complete identification of criminals convicted of offences coming within the meaning of the first schedule of the Habitual Criminals' Act (1869), that the Commissioner of Police of the metropolis should be furnished with photographic likenesses of all such offenders, I am directed by Mr. Secretary Bruce to request that you will move the Court of Quarter Session of the county of Middlesex to take such measures as may be necessary for enabling the governor of any prison within that jurisdiction to transmit to the Commissioner of Police, with the periodical returns already ordered to be supplied, a photograph of each prisoner of the class referred to. Provision is made by the fifth section of the Act for defraying any expenses incurred, which Mr. Bruce apprehends are not likely to be great, in carrying this arrangement into effect.—I am, sir, your obedient servant, "A. F. O. Liddell."

The shrewd hint, becoming enough in the minister of an economical government, that the expense is not likely to be great, has been already questioned at the Middlesex Sessions, where it was suggested that for that Court alone the order would render necessary the production of ten thousand photographs each year. The actual probable amount of the expense has, however, most likely been ascertained, as ample data must exist in those prisons where photographic aids to identification have been employed for many years, and experience up to the present time suggests that a large saving is effected both in the costs of conviction and the reduction of the number of prisoners passing through the gaols. Criminals who, without definite means of identification, are perpetually returning to prison for short terms of imprisonment, involving all the loss to the community and the cost of repeated convictions, when identified unerringly by photography, receive sentences which relieve society of their attentions for several years. Captain Gardiner, Governor of Bristol Gaol, who first introduced the system, states that the average number of prisoners in Bristol Gaol has been reduced from 160 to 100, and is of opinion that by the introduction of photography into every gaol, and an exchange of likenesses of the prisoners, nearly all the professional thieves will be identified, and a manifest gain in dealing with them will necessarily be secured.

As early as 1847, we believe, Captain Gardiner first conceived the idea of securing a photographic record of the *personnel* of the prisoners passing under his attention, and about fifteen years ago he addressed a letter to the governors of Her Majesty's gaols generally, pointing out the importance of preserving portraits of the prisoners under their charge as a means of identifying them on the occasion, only too common, of a repeated visit to the gaol. "It is well known to all," he said, "who have been concerned in criminal administration, that the most cunning, the most skilled, and the most daring offenders, are migratory in their habits; that they do not locate themselves in any particular town or district, but extend their ravages to wherever there is the most open field for crime;" the best planned robberies, he adds, being rarely conducted by the resident thieves in any district. This migratory or Bohemian tendency diminished the risk of identification in the exact ratio in which it brought the criminals within fresh judicial districts and under fresh official inspection, and often permitted expert professional thieves, hardened criminals, to pass off lightly as first offenders, only just stepping out of the path of rectitude. Written descriptions were rarely found sufficiently precise for identification, and hence Mr. Gardiner was induced to try photography, which he found most efficient for the purpose, and strongly recommended for systematic adoption to his brother governors.

The Lords' Committee, to which we have referred, recognized the force of the advice, and recommended in their report its general adoption, and in closing their remarks observed:—

"The governors of Bristol, Wakefield, and Leeds gaols corroborate the advantage of the use of photography. Mr. Gardiner says: 'I introduced some years ago—indeed, I was the first who introduced them—the Daguerreotype portraits of the prisoners, and, from having succeeded in one or two cases, we introduced it more freely; we now take a large number of portraits, and I think it would be very difficult for a man to escape detection in our gaol. I take a stereoscopic picture instead of a plain portrait, and I request the parties to whom I send it to put it into the stereoscope. They have a better opportunity of seeing the man before them standing out in relief. We merely take portraits of those whom we do not know—railway thieves, and strangers to the city, who are taken up for picking pockets at the railway stations and in railway carriages. We have found out a great many by that means. On one occasion I recollect an officer of mine being offered a large sum of money by the wife of a prisoner to release him. He was offered £100. This was reported to me; and I thought, as the man had only three months more to serve, he certainly must be wanting somewhere else. I took his portrait directly, and sent it round to perhaps forty or fifty different gaols, and he was recognized at last at Dover. I had an order from the Secretary of State to remove him instead of discharging him. I removed him on a Friday, and on the following Friday he was sentenced to fifteen years transportation for highway robbery,' and the committee strongly recommend the further extension of this system, which is inexpensive, effective, and wholly free from objection."

In the Carlisle gaol the governor, Mr. T. H. Redin, himself a skilful photographer, has adopted the plan for years, and has more than once favoured us with details of its advantages and of the method pursued, which it may be interesting here to repeat as we have before described it:—

"Where the system is adopted, the portrait of every criminal is taken as soon as he arrives at the gaol, and prints from this negative are circulated, attached to a printed form, in which a description is given, including details of age, height, complexion, hair, eyes, nose, whiskers, and specific marks, and also the account which the prisoner gives of his place of birth, last residence, education, trade, religion, &c. The circular, containing the portrait and these particulars, is forwarded by the governor to the governor of a neighbouring gaol, stating that 'the prisoner above described is in custody for trial;' and a request is added that if he is recognized as having been in custody before, particulars may be forwarded, and also that the circular may be forwarded to the next gaol marked in the route annexed. Thus the document passes through a prescribed route, receiving as it travels the testimony of various governors, intimating that the prisoner is 'not known,' or that he was convicted at any former period, generally under some other name than that now assumed, and is finally returned to the gaol from whence it was issued, furnishing at times curious facts in the statistics of crime, and in the biography of gaol-birds."

The prison limner generally possesses a curious record of the strange devices by which the cunning of the criminal is manifested in endeavonring to evade or destroy the precision of the lens in securing a true portrait of him for subsequent use, which he regards as taking a mean advantage of him. Some treat the attempt with open defiance, resolutely refusing to sit still during the operation; others, with a mock air of submission, sit perfectly quiet during the preliminary arrangements and focussing operation, but move sufficiently at the vital moment of exposure; others, who pretend to have no objection to be portrayed, contrive to produce such an amount of facial contortion, by squinting, twisting the mouth, &c., as will effectually destroy identity in the portrait. As the plan is now to become universal, methods of dealing with the strange sitters will doubtless be studied and systematized. Various plans of meeting the difficulties have already been devised, to which we have before referred. In some cases this cunning is met with resolute perseverance, and in others with stratagem, so that in all cases a sufficiently characteristic likeness is obtained. One governor informs us that he generally contrives that the operation shall take place just before dinner, and refractory sitters are informed that no dinner will be dispensed until the portrait has been obtained, a practical argument, the force of which is generally recognized. In another gaol, after the sitter has, by movement or contortion, baffled the portraitist, he, or still more commonly she, is handed to a seat in a well-lighted place to rest awhile and watch the operation repeated with the next criminal. The sitter just rejoicing in the cunning which has defeated the attempt of the photographer, generally sits perfectly still, watching with eager interest the operation for which another is sitting. In the meantime, a concealed camera, within range of which the first victim had been placed, is doing its work, and a natural and characteristic likeness is obtained of the unconscious criminal, who had apparently retired master of the situation.

We shall note with interest the further and general development of this branch of our art, which has hitherto had but a partial application.

Critical Notices.

REPORTS ON THE TOTAL SOLAR ECLIPSE OF 1869. Conducted under the Direction of Commodore B. F. Sands, Superintendent of the U.S. Naval Observatory, Washington.

We have already given somewhat copious accounts of the various very complete and successful operations in the United States in photographing the total eclipse of August 7th last year. Thanks to the courtesy of Professor Henry Morton, to whose charge a very important expedition was committed, and to our esteemed *collaborateur* Mr. E. L. Wilson, who took part in the operations, we were enabled to bring before our readers early and full details of the undertaking and of its success. We have before us a further and very gratifying illustration of the earnest and wisely-liberal spirit in which all the operations were conceived and carried out. A very handsome volume—containing some of the finest illustrations of the kind we have seen—contains the reports of the various officers connected with the United States Naval Observatory, of the eclipse in the various phases, and different aspects of interest presented with which they were respectively charged. The volume consists of upwards of two hundred quarto pages, and a dozen fine illustrations, including fac similes of the photographs obtained, and a magnificent chromo-lithograph of the aspect of the eclipse during the totality as seen through a four-inch telescope.

The element of chief interest to our readers is the very full and interesting report of Dr. Curtis, the Assistant Surgeon-General of the U.S. army, who is, as many of our readers know, an accomplished photographer. To Dr. Curtis the photographic department of the Les Moines expedition was committed, and the record we have here of the mode in which it was conducted, and the complete success secured, affords evidence of the wisdom of the appointment, and shows the simple steps by which any chance of a *fiasco* like that of the English eclipse expedition of 1868 in India was avoided. On the 24th ot July, just a fortnight before the eclipse, the apparatus and photographic equipment were fixed ready for work, and every fine day, until the day of the eclipse, was spent in practising photography on the sun, and ascertaining that everything was ready for successful work. When the time arrived everything was in perfect order, and one hundred and nineteen good negatives of the different phases of the eclipse were secured.

In selecting his apparatus Dr. Curtis decided on the use of a Huyghenian eye-piece, of which he could secure negatives of four inches diameter direct, instead of producing smaller negatives to be submitted to a subsequent process of enlargement, his experience in micro-photography having satisfied him that such an operation was always attended with loss. "The only drawback," he says, "to the use of an eye-piece was the comparatively long exposures required in consequence during totality, making it possible to obtain but few photographs of that phase; but I considered that even *one* negative showing the structure of the red prominences on a comparatively large scale would be worth a dozen little images where nothing but the mere position of the principal protuberances could hope to be shown." Of the ingenious arrangements for rapid and precise exposure, and other preliminary details, we have not space to write now, except so far as they refer to the formulæ adopted in preparing the chemicals.

Remembering that in the subject of most importance, the phenomenon of totality, involved great contrasts, the corona possessing very feeble actinic power, whilst the red prominences were known to exercise great photographic activity, the formula chosen had especial reference to this fact; and finding that the eclipse pictures of Warren De la Rue and those of the German expedition had failed in doing full justice, he adopted a formula different altogether to those previously employed. After due consideration the formula of one of his assistants, Mr. Le Merle, a practical photographer of much experience, was selected, a very large proportion of bromide entering into the composition of the collodion, which was prepared as follows:—

Iodide of ammonium	5 grains
Iodide of cadmium	5 ,,
Bromide of cadmium	5 ,,
Atwood's alcohol, 95 per cent.... ...	1 ounce
Ether	1 ,,
Pyroxyline	*quantum suff.*

The collodion was mixed ten days before use, tincture of iodine sufficient to make it a lemon colour having been added a week after mixture.

A forty-grain nitrate bath, containing sufficient nitric acid to produce clean pictures under prolonged development, was employed, the solution having been mixed and used daily five days before the eclipse. The developer employed was prepared as follows:—

Saturated solution of protosulphate of iron	1½ fluid ounces
Acetic acid, No. 8 (equivalent to Beaufoy's)	1½ ,,
Water	13 ,,

Many of the negatives produced with these formulæ are said to be extremely delicate and of much technical excellence, and the prints before us certainly justify the statement.

A considerable portion of Dr. Curtis's report is devoted to a consideration of the line of increased brightness on the solar disc immediately in contact with the dark edge of the moon. It is not a little curious that a phenomenon familiar to every photographic portraitist who has taken a figure with black drapery against a somewhat light background, and known to be of purely photographic origin, should have been a subject of much grave discussion amongst astronomers. By some, this halation or line of light has been regarded as evidence of the existence of a lunar atmosphere. By Mr. De la Rue and the Astronomer-Royal it has been pronounced to be purely subjective, an optical delusion produced by the immediate contact of a dark and light surface. Dr. Curtis believes it to be the result of diffraction, and gives an interesting account of his experiments in producing what he terms artificial eclipse photographs in verification of this view.

On the further operations, and of Dr. Curtis's excellent remarks on the lessons taught by the photographs of the eclipse, we have not time and space now to enlarge, but shall probably return to the subject on another occasion.

The party under Dr. Curtis, besides securing the very complete series of photographs which constituted the especial object of their expedition, also obtained seventy-nine photographic tests of the actinic power of the sun at different altitudes, taken on eight different days, and some interesting stereoscopic views of the scenery at the observing station. Throughout, Dr. Curtis appears to have realized the qualifications which he lays down as necessary in the more responsible business of an undertaking of this kind. He says it "should be entrusted only to a most accomplished photographer, who understands thoroughly the nature of the object photographed, and the exact effect which it is desired to produce."

DOVER. By Samuel J. Davies. With Photographic Illustrations by Russell Sedgfield. (London: Provost & Co.)

Almost the whole of the south coast of England abounds with natural beauties and with historic associations of the highest interest, and these characteristics of the south coast generally are possessed by Dover in a pre-eminent degree. The volume before us contains a capital sketch of the history and progress of that city in the past, and a good description of its modern improvements. The name of Russell Sedgfield is a guarantee for the excellence of the photographs, of which there are a dozen, well chosen and admirably executed.

GLEANINGS FROM DAILY WORK.

BY STELLAR POLARIS.

Flattery.

All women are said to love flattery; and probably all men also; but it is its influence on women that I am now considering. They love it from an inborn principle of their nature; and they can no more do without it than they can do without the satisfaction of other natural wants. It may be fortunate, so far as men in general are concerned, that women are so given to the love of praise; but for one class of the community it is most decidedly very unfortunate. One of the greatest misfortunes under which photographers labour is the almost total incapability of their *art* to flatter; at least, in the way in which young ladies would like it to be done.

This distressing weakness on the part of the ladies exhibits itself not only in the greater and more important features of the picture for which they come to the artist, but also, even in many cases more painfully, in minute or indifferent matters, which form no really telling part of the photographer's work. It is a trifle, for instance, to secure a really good artistic pose, a fine expression, and a thoroughly harmonious result. A picture often, which would send a critic into raptures, is ignominiously rejected as quite unworthy of the sweet creature it represents. On instituting a careful enquiry into the cause of failure, the "expression" will be found fault with; or, perhaps, only general dissatisfaction expressed. In any case it is, as often as not, this very craving after some fancied flattery which actuates the mind of the discontented party. Then, again, girls want to be flattered in special points, as well as in the vague and general way at which I have already hinted. Girls of the present day are rather like the fakhirs and other Indian zealots: they are very fond of putting themselves to a variety of new and ingenious tortures; and, like the Easterns whom they thus imitate, they also like to gain very full credit from the "common herd" for the punishments they have undergone. For instance:—A certain young lady sees, in a "Magazin des Modes," a beautiful example of the "wasp" type, and resolves upon imitating—or, if possible, surpassing—it. Quite regardless of any question beyond the attainment of supposed beauty of form, such a girl will undergo the pain and discomfort, to say nothing of danger of disease and permanent deformity, of "tight-lacing." Then woe be to the luckless photographer who, taking a portrait of this self-educated young lady, does not secure a picture which will show off the "greatly reduced waist to the best advantage!" Woe be to him if he does not so put the arms "akimbo" as to show the full extent of the waistband! And, worst woe of all, if he dares to let it appear that the ever-fondly contracted girdle is by one hair's breadth too large! To please such a customer as this, you must make her look as if she had no waist at all. She will say, or rather think, with Falstaff: "I would my means were greater, and my waist slenderer!"

Another special vanity to which girls are subject, and for which they would like an especial flattery at the hands of photographers, is founded on the idea that in certain small and often very badly-formed boots, their feet are so exceedingly pretty as to form an indispensable addition to the picture.

I need not, however, dwell upon these little vanities which the female mind delights to have flattered. All photographers must have had experience of them long enough before now; and each may have found out a remedy in his own case. Generally, the only one which suggests itself is to "grin and endure it."

There is, however, a far worse and more serious form of flattery with which the photographer has to contend, and which at times amounts to a serious impediment to business. I refer to the flattery of friends. This is really becoming a serious evil. People—knowing, as a general truth, that photography, being truthful, does not flatter people—find in any ordinary good portrait an excellent opportunity for that very kind of flattery which is so exceedingly grateful to the weak mind of the female sex. "Oh, my dear creature, it really does not do you justice!" says the very affectionate female friend. "An excellent photograph, no doubt, and, if you were plain, or positively ugly, it might be good; but, as such is not the case, I would, for my own part, rather trust to memory than to such an unfavourable impression." And so on for half-an-hour, if necessary. *Such* is the comment from the gentleman. It is not that he does not think the picture good; he generally thinks it splendid; he would often give his ears for a copy; but, knowing the position to be, with his hearers, one of safety, he can, at the expense of the photographer's reputation only, pour the delicious drug of well-chosen flattery into the ears of his vain and self-satisfied hearer. And what is the result as far as the photographer is concerned? In the morning a letter had been received:—

"Miss A. presents her compliments to Mr. Camera, and she wishes to order twenty-four cartes-de-visite like the one standing, which she considers *very good indeed*. Miss A. would like them sent as soon as possible to * * *."

The next morning, after a dose such as above described, comes a letter:—

"Miss A. is sorry to inform Mr. Camera that *her friends* do not at all like the pictures he has taken of her. Miss A. will therefore thank Mr. Camera to rescind her order, and she will call again the *first fine day*, in the hope of obtaining a more satisfactory likeness."

What can a photographer do under such circumstances? "Grin and endure it?" or kick, and lose a customer?

I find, for one thing, that it is always an excellent plan, when there is the least suspicion of this sort of trickery, to insist on knowing definitely what *is* the matter with the pictures, especially as they have been once approved of. I find, if it be politely put, "that as the pictures were first approved of, and then disliked, there must be some very *radical* fault which was not noticed at first;" that the customer, if unable to give any real reason, quails before the idea of confessing to flattery, and submits to a repetition of the same pose, same lighting, and, in fact, to the same picture being done over again. But one who has thus been tampered with, will never again think her pictures *very good indeed*; or, if she does, she will never have the grace to confess it.

There is another charge of vanity to be brought against women; but, as it is a much more natural one, it may be more leniently dealt with. I mean the fondness with which mothers always consider their babies the prettiest in all creation. It is pardonable, perhaps, but it is certainly "amoosing" to see a woman come in with a fat, sleepy-eyed, bullet-headed brat in her arms, and, looking round upon your specimens with an air of conscious superiority, ask, "Don't you think, Mr. Camera, that this little fellow would make a capital picture?" You, of course, deferentially "hope to succeed with the portrait;" and perhaps you may add a mental reservation to the effect that you very much hope to succeed, and quickly too, as you would rather do one plate than two of that model. You find it difficult to repress the rising smile (or it may be grin), when you find the fond mother did not so much mean that, but this: "Would it not be rather a 'nice thing' to get a good picture of such a fine boy?" Kind, you think—*very* kind; but you really don't want a model just now; not to-day, mum, thank you all the same!

GALLIC ACID IN COLLODION AS AN ACCELERATOR.

BY S. BEVERLEY.[*]

In the paper I am about to read I can offer you nothing new; no old process doctored up to give you as a new invention; nor can I imitate the gentleman who writes to the journals that he has discovered a new method of toning, giving better results than anything yet known; which, however, turns out to be the old discarded method of mixing the gold and hypo together, and toning and fixing at the same time. Nor can I promise you that I have made the discovery, which so many seem to have made, by what secret dodge Messrs. Robinson and Cherrill managed to print their famous picture (sea gulls) without first having photographed sea gulls at all, for, by-the-bye, it never seems to have entered their heads that a real negative of gulls was taken, which I believe to have been the case, as I see no reason why they should not have been able to do so; for who can have seen photographs of breaking waves, and doubt the possibility of taking birds in flight?—a difficult task, no doubt, but I believe in the possibility of doing it. The pictures of this class can be made by some of the methods devised by the sharp class of photographers, I doubt not; but had I time to stay at the sea side in the light spring months, I would try to prove that such a picture might be made by simple photography. Let some of the ingenious prove that they can be done by the dodges they propose.

One of the most important discoveries that could be made just now, I believe, would be some means of shortening the exposure when taking portraits of children, &c.; and when I read Mr. Bovey's paper on the subject, I did think we should be something nearer, for after reading through his paper, which was too long for insertion for one week, I got the substance of it, which I will give you in these few words: "Add a trace of gallic acid to the collodion." Nine words, gentlemen, would have given me all the information that I got from the paper which was too long for insertion in one week's News, but was continued in two or three; the which papers I devoured greedily, all the time looking for the substance, which I have given you in the nine words. But what of that? A writer like Mr. Bovey, who writes so much, and seems to know everything, I can well excuse for writing so long an article on so important a subject as instantaneous photography, even though he might have told all he knew in one line. Well, gentlemen, having read his long article, and got to the end of it, and having found so much promised, and the trial of it so easy, I at once set about it. I at once, on the day that I got my News containing the last part of Mr. Bovey's article, put a trace of gallic acid to a five-ounce bottle of collodion, which I had in use, gave it a good shake up, and waited until it had settled, with as much patience as I had waited for the next week's News, after reading the first part of Mr. Bovey's article I thought the thing so simple, so easily done, hardly a loophole left by which to go wrong, and I had too much respect for Mr. Bovey to think he would write so long an article about something he could have told in a few words, without having something really good at the end of it. Well, gentlemen, as I had three other bottles something like the one to which I added the gallic acid, I thought I had better do something to distinguish the one which was to work instantaneously, so I wrote on a label, "Extra rapid collodion," and affixed it to the bottle. Well, I waited with patience, sometimes looking through the bottle to see if it was quite clear, and found it was not so. It, however, struck me that as the light was good, I might try it then, without settling. True, I had no subject, but to settle a point so important, and for which I had waited so long, I thought the furniture would do, so I prepared a plate and exposed five seconds. I developed, and out came the picture—slowly, to be sure, but it came out. I had expected it to flash out; but no, it only came out very slowly, and I thought the collodion without the acid would have done that, for the light seemed excellent. I prepared another plate with ordinary collodion, put it in the same bath, exposed at the same things, for the same time, and the picture came out the same. I could see no difference. This seemed strange; but I thought the gallic acid had not yet taken its full effect, so I put it with the other bottles, to be used with them, and I have often tried it since, but with the same results. The gallic acid seems not to have altered the working qualities of the collodion in any way. I mention these things to see if any other member has tried and been more successful in his attempts to follow up the lessons which such people as these writers of articles in the photographic journals give us. I think persons who try experiments should be sure that they have made not only a discovery, but that the discovery is an improvement, before they place the results of their experience before the public. It seems to me that a good many writers simply try an experiment, fancy they are successful—or, if not, that they will be so after a few more trials—and at once rush into print, lauding their own efforts to the skies, only to find, after a little cool reflection, that they have done a very foolish thing in advocating a something which they at the time thought would be good and useful, but which they find is not only useless, but far from being new, and having in many instances been published years before.

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[*] Read before the Oldham Photographic Society.

Thus is it that we have so many articles written in the journals from which we can glean no useful information; so many processes brought before us that turn out to be utterly useless; so many patents which are neither profitable to the patentee nor useful to the public. I do not wish to imply that all writers write without due consideration; that all patentees patent useless inventions; or that we have not a few who have discovered really useful processes; but what I complain of is, that persons write so often and to so little purpose.

I shall conclude my remarks by urging upon our members to take note of everything they try and think it better than the old plan; to try it often and compare it often before they conclude that it is better than the old plan; for the time is near when the light will be so much better than now, that any one who should try any new process would be prone to think it very good, even although it might be inferior to the old, for we know well that with the light of spring our troubles seem to vanish without our knowing why. Our baths, which have been foggy and troublesome during the winter months, now work wonderfully clean and well. With the same collodion, the same bath, and the same developer with which we were struggling in the winter months to get out an image of possible quality with a painfully long exposure, we now get good results which almost astonish us with their brilliance, and more with the shortness of exposure they require. Yet no change has been made in the formula with which we work, no change in anything but the light.

Now, I believe the one thing wanted amongst photographers is, a process which will work sufficiently quickly in ordinary winter months to be depended upon for portraiture, as we can now depend upon in the spring and summer months; and I believe any one who can give unto us a process of this sort that is not surrounded with more than ordinary difficulty in the working of it, will confer a greater boon upon us than any that has been given us since the time when Robert Hunt introduced protosulphate of iron in the place of pyrogallic acid for the development of the latent image.

ON THE PRACTICAL VALUE OF DRY PLATE PROCESSES.

BY A. MOLL.*

The oft repeated question: Which is the best and most certain dry process? and the multifarious replies given to this query, have induced me to say a few words on the subject.

I myself have had considerable experience in dry processes, and there was a time when many of my friends rivalled me in their exertions to prepare serviceable plates. One would try the collodio-albumen, another the tannin, a third the beer method, and so on through almost the whole series. In this way we experimented one summer after another, each specially lauding his own process and results, until, at last, the matter was quietly allowed to rest, and all of us confined ourselves to the practice of wet plate photography.

Several of the most distinguished landscape photographers have I encountered during their wanderings; among others, Mr. William England, M. Braun, and M. Remelé; and when I imparted to these gentlemen my own experiences in regard to dry plates, they all laughingly admitted that their own were very similar. M. Braun informed me that he had disbursed as much as 15,000 francs in the attempt to obtain a good dry process, and had finally resolved to stick to wet plates, notwithstanding the grave drawbacks and difficulties which the transport of heavy baggage and chemicals involved.

England has produced a couple of hundred beautiful Rhine pictures with the aid of the collodio-albumen method, but how many plates failed him he does not tell us; this much, however, is noteworthy, that of his many negatives taken in the vicinity of Heidelberg and the Seven Mountains district (for he was seen working there) not a single print has been published, for no other reason, apparently, than that the plates were of no value, a circumstance which seems to be borne out by the fact that during his last tour in the Tyrol only wet plates were employed.

Remelé has told me that during one summer he was successful in obtaining fifty excellent Rhine views by means of beer dry plates, but that on a later occasion it was impossible for him to secure a single good negative by the process, and he now works solely with wet collodion.

When photographers of high rank, such as these, give up dry-plate photography, there must surely be something wrong; and, in fact, even if we go so far as to admit the dry process to be as certain as the wet, there still remains the circumstance that the former involves many complicated manipulations. This is even the case with the simplest process, the Harnecker, where it is merely necessary to apply the Harnecker collodion to the plate, and to wash and dry it.

Let us for an instant compare this process with that of ordinary wet collodion. As far as the sensitizing operation, the manipulations in both cases are the same; but in that of the Harnecker collodion, five to ten minutes are required, whereas two minutes are sufficient for sensitizing a wet plate, which may afterwards be at once exposed and developed. The dry plate is, however, not so easily got rid of, for there follows:—

a. Washing with distilled water.
b. Washing with ordinary water.
c. Washing again with distilled water.

The above involves a period of at least twenty minutes, and in an hour, therefore, but three plates at the most could be prepared. Then follows *d*, the drying operation, which necessitates the lapse of a further period of six hours before the plate can be exposed. While, however, a wet plate can be forthwith developed after exposure, a dry plate requires, *e*, moistening and rinsing with distilled water for five or ten minutes, and, *f*, immersion in a silver bath for another minute or two. It may be affirmed that in the tannin process, the operations *e* and *f* are unnecessary, and that the developer may be at once applied; but, in any case, the development of a dry plate is a very tedious operation.

Mr. Gordon has said that he sometimes spends an hour in finishing an exposed plate, and if this is indeed the case, we will rest contented with the Harnecker process, and take into consideration only the operations from *a* to *f*, above detailed. For my own part I must frankly admit that I find it more convenient to fill my travelling trunks with chemicals, to pack up my tent, and to cause my servants to transport them to their destination (especially as these duties need not be performed by myself individually), than to go through, one by one, the operations necessary for the preparation of a dry plate, and which require to be repeated in every instance. Far be it from me to bring Harnecker's process into disrepute, for I would attribute to it praise rather than blame; and where, in extraordinary cases—as, for instance, for long exposures of interiors—a dry plate process is necessary, I would by all means recommend it. But what I wish to say is, that it is much better to be independent of dry plates altogether, if only from the broad fact that one never knows until home is reached, and the plate developed, what success has attended one's labours, while in the wet process the value of one's results are at once apparent, and one is never, so to speak, working in the dark.

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* *Photographische Notizen.*

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FILTERING COLLODION.

BY M. CAREY LEA.[*]

The clearing of collodion by filtration is a matter that does not always work very smoothly. Filtering through sponge, it is true, answers tolerably well; but in the apparatus made and sold for this purpose, if the sponge be not very tightly rammed round the tube, the collodion finds some channel for penetrating without filtering; and, if the ramming is thoroughly done, the filtering is very slow. But the worst is, that if the apparatus is put away for some time (unless a quantity of collodion be expressly left in the lower part), the sponge becomes a hard lump by the drying up of the collodion with which it is saturated, and this contracts it extremely. This contractile power of collodion is something very curious; we see its effects when a negative splits in drying, and I am informed that this means is now employed in medicine where it is desired to apply a contractile force to the skin; as, for example, in some forms of erysipelas, the skin is painted over with plain collodion, and the effect produced is simply mechanical. This contractile acting upon the sponge is very apt to spoil the filter, so that if the operator, unaware of the effect that has been produced, proceeds to filter his collodion through the contracted sponge, he finds his plates spoiled by motes.

Some have advocated filtering through paper, and I believe that there does exist paper through which collodion may be filtered. It is, however, not at all easy to get, and I judge that, at best, the operation must be exceedingly tedious.

It recently occurred to me to try filtering through strong but fine and close-woven cotton stuff, such as that which is made for the best quality of cotton shirting. I find it answers so excellently that I now use it habitually. The proceeding is as follows: select a piece of cotton stuff that is very close-woven, smooth, and perfectly free from fuzziness of surface. It is only the very best sorts that possess the desirable qualities. Throw it into boiling water, and let it lie for some hours to detach the starch and dressing; rinse it well out in cold water, wring, and dry it. A small circular piece about four inches in diameter will make a good filter; as the collodion runs through pretty rapidly, it is useless to employ a larger filter.

A still better filtration is got by combining this with a sponge. A small piece of very clear sponge is pushed into the neck of the funnel. The effect is quite different from where the sponge is used alone. The muslin stops nearly all the fibres and insoluble material which would rapidly clog up the sponge, so that the latter remains much freer. And thus the filtration through the sponge and muslin goes on more rapidly than it would through the sponge alone.

I now employ this mode of filtration exclusively, rejecting the regular collodion filter which I formerly used. Although the surface is exposed, the evaporation amounts to very little, and may be furthermore checked by laying a piece of glass or of card on top of the funnel to stop the circulation of air. It is best to use a funnel a little larger than the muslin, so that the card may rest upon the sides of the funnel, and not touch the filter.

I find this mode of operating especially convenient for the collodio-bromide and chloro-bromide processes. It is rapid and efficient. When the sponge becomes choked it is easy to replace it. I generally use a fresh sponge with each collodio-bromide filtration; this is not at all necessary when filtering ordinary collodion. The quantity of insoluble matter in the collodio-bromide mixture tends to clog up the sponge sooner.

The sponge sold as surgeons' sponge is very suitable. Common Bahama sponge (carriage sponge) is even better if it be soaked for two or three days in a good quantity of dilute hydrochloric acid, and then be thoroughly well washed out.

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AFTER-INTENSIFICATIONS OF PORTRAIT AND LANDSCAPE NEGATIVES.

BY JOHN C. BROWN.[*]

The habit among photographers, of depending upon intensification to force negatives up to what they may consider a proper printing strength, is a very dangerous evil, well calculated to make them careless of their work and reputation. Prints from such negatives are generally masses of black and white, and may well be described as monuments to intensification.

The writer had quite recently an opportunity of examining a very large number of negatives from almost all parts of the United States, and it would appear, from a careful study of their merits, that this injurious habit was an epidemic extending over a large portion of the country. The chemical sulphide of potassium was responsible for a large share of the spoiled work, but bichloride of mercury and its attendant ammonia were fairly represented. It will be a glorious day for photography when its votaries will banish from their dark rooms these chemicals. As things of the past they must now give place to a more advanced knowledge upon the subject of the chemistry of photography.

The intensifying of negatives is too often used to cover up such defects as dirty plates, under-exposure, over-worked chemicals, &c., but almost always at the sacrifice of every particle of half-tone, which is the charm of all pictures. Although opposed to intensifying as a rule, still I would make some exceptions.

Often it is difficult to obtain sufficient density in a negative by the application of the developing solution only. The chemicals that worked so well yesterday, for some reason fail to day; atmospheric influences may be the cause; but chemical solutions are liable to get over-worked, and need rest from their continued labours. Under such circumstances an entire change of chemicals may prove of advantage. But if an otherwise good negative should show signs of weakness, with no prospect of obtaining a better result by another trial, then it is of importance to add strength to make it worth printing.

There are many chemicals that will answer the purpose of increasing the density of negatives, and, provided that great care is exercised to know when to stop, negatives not worth saving are rendered capable of giving fair prints. Foremost among the number of strengthening solutions, I would suggest pyrogallic acid and silver as giving the most reliable results. Permanganate of potassium, iodine, silver, and citric acid, also prove in experienced hands worthy of consideration.

The object of this article, however, is not to discuss at length the chemicals that can be used for this purpose, but to seriously caution photographers not to depend so much upon the habit of universally strengthening negatives as is now the case. Let the aim of every operator be to get the right amount of intensity with the iron developer alone, and, by a rigid scrutiny of chemicals, light, &c., strive to make none but first-class negatives, clean, forcible, and well-lighted, without the use of any intensifying agent whatever. Depend upon it, that the less chemicals put upon the plate after the first development with iron, will be better for all concerned.

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[*] *Philadelphia Photographer.*

[*] *Philadelphia Photographer.*

Correspondence.

RAMBLES AMONGST PROVINCIAL STUDIOS.

Dear Sir,—I promised to send you some further details of the observations made during my holiday rambles; so, having now made the necessary arithmetical calculations of the season, and forwarded specimens of them to my patrons for their digestion and liquidation, I am now at leisure to pen my observations.

First, as regards prices. These seem to be governed, to a great extent, by the estimation in which the skill of the artist is held by the public, and this is, in most cases, a just one. In more than one instance undue competition and reduction of prices have had their merited reward in failure. I would caution any who would take so mistaken a course, that ruin must eventually follow it. Photography is no longer a novelty, but has settled down into a recognized profession, having a certain demand for its productions, which no reduction of prices can permanently affect. Should business be slackening, let the professional compare his performances with those of his more popular neighbour—estimate the comparative eligibility of the situation of his place of business—take into consideration the amount of population of the town and neighbourhood in reference to the present reduced demand for photographic productions; and should he find any of these causes weighing against him, let him consider whether it would not be better to seek a wider field of labour, than attempt to scrape up at best but a precarious and scanty livelihood, under adverse and anxious circumstances. It is hard, 'tis true, to have to break up old friendships and associations, but it is true also that necessity has no law.

The most frequent mistake in photo-manipulation appears to be the production of pictures having contrasts of too great a strength, and wanting in half-tone; this effect is most frequently produced, at this dull season of the year, by not taking into consideration the reduced quantity and quality of the light, and making due allowance for this by longer exposures. Cold also *greatly* retards chemical reactions; therefore the studio and operating room should be sufficiently warmed, say up to about 60°. It is bad policy, by neglecting this, to render the sitters uncomfortable, and retard operations, producing mediocre pictures, thus entailing loss of business. But although warming the chemicals to a certain extent is advisable, I should not recommend the operator to carry the ash-pan of the stove full of hot cinders and dust into the dark room for the purpose of standing the bottles in; it is a dangerous and dirty practice, causing comets and specks, as the slightest motion in the room will cause this dust to rise into the atmosphere, and ultimately settle down upon the wet negative. Should an iron stove be used, like those in shops or the laundry, it will be found a healthy, convenient, and cleanly addition, to have placed upon the top of it a deep dish, or other vessel, having water in it, at such an height above the fire as never to become too hot. The rooms in Parisian houses are frequently warmed by such. During an evening visit, whilst residing in that city, after a little time the ladies complained of headache; the gentlemen became drowsy, without any apparent cause. Thinking that it might proceed from the dryness of the atmosphere of the room, caused by the heat of the stove, I persuaded the hostess to place a basin of water upon it. As soon as the evaporation from the water began to rise, these symptoms were entirely removed. There can be no more unhealthy situation than to be confined in an atmosphere of hot, dry air: lassitude, drowsiness, and headache are thus produced, and, if the practice is continued, bronchitis, consumption, and other inflammatory diseases are sure to follow. I hope your readers will take this caution into serious consideration, in justice to their assistants as well as themselves.

I have paid some attention to the different modes of lighting the studio, and have consulted some practical men on this subject. It seems generally acknowledged that a north side light is most advantageous; a ridge roof most easily managed in regard to top light; that a moderate height is conducive to shortness of exposures, and that front light produces flatness; and the narrower the studio, the more this is the case. The entire length of a studio should not be less than the focal range of a properly selected lens, for a standing carte-de-visite figure, with six feet added; but if the dark room is situate at the end of the studio, its length may be included in this estimate, as by having the door placed in the centre of the partition, between it and the studio, the whole combined length can be used when occasion may require. As the excellence of photographic productions in a great measure depend upon the principle, the size, height, shape, aspect, and situation in which the studio is built, it would be well to give these matters deeper consideration than has hitherto been bestowed upon them by beginners.

I find a great variety of experience amongst operators as to the use of the collodions of various makers, that which is praised by one being frequently condemned by another. Certain varieties of light, caused by difference of situation, may have something to do with this; also using an unsuitable developer. A little scientific doctoring by an intelligent operator would enable a good sample of collodion to be used under a great variety of circumstances, but it must be done with caution. I have seen some of the Rembrandtesque pictures: if those I saw were a fair sample, they are a mistake; the heads and hands were so much out of keeping, that they seemed to float in air at some distance in advance of the surface; the rest of the picture was one universal dark smudge, produced by after-printing, the figure being protected by a mask; this in one case had been of an oval shape, as seen by a lighter oval space in the centre of the picture. This style may be a novelty, but certainly is not art. Had the backgrounds been plain, and devoid of all accessories, the want of art feeling had not been so apparent; but when such are introduced, the projecting angles of all objects must have their relative lights and shadows according as they may be placed—nearer the foreground, or further within the picture—in full light, half shade, or shadow, of however deep a tone the picture may be. Let the photographer who wishes to imitate the style of Rembrandt carefully examine one of his paintings, or a well engraved copy, and he will find that, although the eye may fail to discern details in the deepest shadows, still the background is not *one universal black smudge*; neither does he depend upon the trick of the lights of a velvet coat to enable the spectator to discern that the figure is intended to represent a man, as was the case in one of the specimens I allude to. I do not intend that these strictures should apply to all pictures in this style; on the contrary, in artistic hands, it is capable of producing some of the finest pictorial effects. I wish to caution some not to "out-Herod Herod."

I see in a recent News, that Mr. J. R. Clark is fearful that I may have prevented some of your readers from using paraffine for the purpose of producing enlargements by the magic lantern. I should still hesitate to advise them to do so, not on account of the impossibility, but that of the danger. Mr. Clark advises, on that account, that the lantern body should be kept cool, but does not say how. If water is applied, I should think that the evaporation from it caused by the great heat of the burning paraffine would produce a mist over both negative and condensers; at least, such has been my experience in heated rooms filled with aqueous vapour. As proper lamps and apparatus can be purchased for the lantern at a very low rate, I consider any makeshift false economy, especially when this tends in a retrograde direction; if the shortness of exposure, certainty of results, and freedom from danger, by the use of the gases recorded by Doctor Monckhoven in the Photographic News, be placed in opposition to the long exposures mentioned by Mr. J. R. Clarke—viz., eight to thirty-two minutes—the danger, the trouble of arrangement, and other drawbacks attendant to this method of procedure will, I am sure, convince your readers that I was doing the best for their interests in ignoring this description of light altogether for the magic lantern.

114, *High Street, Ilfracombe.* J. Martin.

VIGNETTING.

Dear Sir,—I have read your estimable journal for many years with much pleasure and benefit, and rely on your kindness for space therein to admit of my giving a few hints on vignetting. Every photographer, I think, will acknowledge the inefficiency of the vignetting glasses generally employed to produce perfectly clean prints, owing to the light penetrating the stippled colour, which is seldom quite opaque. Now, cleanliness and photography are as indispensable to each other as the Siamese twins, and, like them, can never be separate. It is true we may get very artistic results by "woolling," but that costs so much time and trouble as to be comparatively useless in commercial photography. I use the term commercial advisedly, for there is a vast difference between that and "amateur" work. The former will, and often does, sacrifice the photograph in order to obtain a flattering portrait, thereby giving satisfaction to the sitter; while with the latter the reverse is mostly the case.

My method of vignetting is as follows:—Procure a stiff piece of millboard, from which cut two squares of equal size with the exterior of the printing-frame. Next gum the edges neatly together, so as to form a case or pocket, with *one* end unclosed. An opening should now be made through both sides of the case, about three times as large as the vignette required, while a third piece of card, perforated with a much smaller aperture than the desired size of vignette, is inserted inside the case. This interior card must be just large enough to allow the printer to shift it horizontally at will, without danger of exposing to the light any part of the negative, except that under the smaller opening. The whole affair can then be fastened outside the printing-frame ready for use. This arrangement is both simple and effective; but should the printing be done in direct sunlight it will be necessary to paste a piece of transparent paper over the aperture in the movable card inside.

Trusting some of your numerous readers may find the above useful—I am, dear sir, yours truly, M. E. B.

February 25, 1870.

REDUCING INTENSITY OF NEGATIVES.

Dear Sir,—Mr. Stillman enquires for a hint as to reducing the intensity of "bromide negatives." Here is a plan which is available for any kind of negative which may be found too dense to render a delicate print. I have used it with *complete* success, even with negatives that have been varnished.

The process consists in pouring on and off the negative a solution of chloride of gold of (say) one grain to the fluid ounce of water (the strength is not very material). This blackens the deposit of silver. When it has thoroughly penetrated the film, wash it well off, and apply a solution of cyanide of potassium, somewhat weaker than one uses for fixing. This must be watched during its action; its tendency is to render the image thin and somewhat bluish, but is perfectly under control in practical hands; then thoroughly wash, dry, and varnish. If the negative has been varnished, the varnish must be removed by several doses of methylated spirit, and some spirit should be mixed with the gold solution. I saw this plan used some years ago with perfect success on some very valuable negatives which had been over-intensified. After the treatment they gave magnificent prints, possessing a degree of softness and amount of detail in great contrast to what they yielded in their previous state. I have since constantly employed the plan, and never found it fail.

If it be necessary to use it on a negative which has been merely dried, a line of varnish should be run round the margins with a brush; this prevents the risk of the film leaving the glass. I do not think I am wrong in saying that negatives thus treated yield proofs of a delicacy of detail not attainable by any other method. When put in the printing-frame, the shadows should show the white paper under them, and the rest of the negative be of a pure black.

The *rationale* of the matter seems to be that a partial substitution of Au for Ag takes place, and the liberated Cl forms $Ag\,Cl$, which is dissolved by the cyanide.—Yours truly, George Robert Fitt.

GALLIC ACID IN COLLODION.

Dear Sir,—Possibly gallic acid may be a very valuable addition to collodion. In an old edition (fifth) of Hardwich, I see it stated (p. 116) that the *first* effect of it is to give increased sensitiveness. If Mr. Bovey will read again my short note on the subject in your issue of the 18th ult., he will find that *I did not condemn it* as "a failure." He says:—"In my own experience as an experimentalist, I love failures." Why, then, is he annoyed that I mentioned that I had had one? Failures often teach more than successes. I suggested a possible cause for my *failures*, and when I first saw Mr. Bovey's note I hoped to find a statement of the circumstances under which he was *successful*, but was disappointed. If he can assist photographers to a more rapid process, that can be depended on, he will deserve the thanks of all who are called upon to photograph babies.

The introductory compliments do not require notice, as Mr. Bovey has no personal acquaintance with—Yours truly, Ed. Seeley.

PHOTOGRAPHY IN DULL WEATHER.

Sir,—After the many lessons gained by constant reading the News, I feel it a duty to do what I can in return.

During the dirty winter weather my patience has been sorely tried by the light, exposing sixty seconds, yea, and more, to get a moderately good negative, and have had to verify the old truth that there is nothing like "exposure." This is the greatest secret in photography.

For winter use, however, I find an old friend's formula, of German origin, very valuable. Prepare some collodion with plenty of body, and full proportion of iodide and bromide. Some have hinted we cannot use any accelerator to advantage. To the fraternity I say, try for yourselves as I have done, and report your trials as I have done, and let us all take notes, then report how the addition acts, and, by comparison, we may learn something more. I made my bath full strength, thirty-five grains to forty grains. Got four ounces Mawson's collodion, and four ounces another maker, eight ounces; and put twelve grains acetate of soda, which dissolved slowly; but since made my developer fresh night and morning. Formula thus:—

Am. sulp. ferri	1½ ounces
Sulp. cupri	½ drachm
Nit. potas.	½ ounce
Water	40 ounces

Filtered. Then added—

Acetate acid glacial	1 ounce
Sp. vini	2½ ounces

Should any children come, add half an ounce more iron, and exercise a little patience and care, and let every person try this formula, and report. Of course this is not new, Mr. Editor, as I have given the recipe many times, and some prefer plain iron solution. I may remark, to forty ounces of silver bath I add five drops nit. acid to twenty ounces, then the other twenty ounces; add six drops saturated solution acetate of lead. Mix both, and filter. I have no trouble. Even to-day I have photographed children easily.

Should any of your readers be in difficulties, they can write to "Lux et Salus," and shall be most happy to give any explanation. I have got to-day even clouds and steamboat.

The accelerator has not injured my bath yet. Have worked for one month, and no changes. I will not presume to inform your readers of the action that takes place. That matter must leave in your hands, after trying, reporting; and should you deem it worth publishing, you can do so. I find instead of exposing sixty, twenty-five to thirty ample now, and children one to two.

The pictures you so kindly noticed have, for three years, been taken with the German formula, sulphate copper and nitrate potassium.—Yours truly, W. H. Brunton.

Wellington Studio, Whitehaven.

PHOTO-MECHANICAL PRINTING.

Dear Sir,—Will you kindly permit me, through your valuable paper, to inform Mr. J. V. Robinson that his so-called invention of producing negatives by hand, as specified in the News of last week, is eight years behind the times; for it must be fresh to many of your readers that in the year 1867 I wrote a letter in answer to a specification of Mr. Hedler, on the production of black and white rings, &c., round vignettes and other photographs. I then told that gentleman that I had produced these said pictures five years previously. I also advertised in the News and *Journal*, offering to teach any printer how to produce them, and sent specimens, on which you kindly commented.

Now, sir, the method which I employed is on the same principle, with the exception that my layer on the glass, or other transparent substance, is superior to that used by Mr. Robinson, and safer to work, and the one most ready to hand to the printer. I think Mr. Robinson will see by this that "one bird in the hand is worth two in the bush," and not speculate on a method which is well known to many photographers throughout the country, through my teaching for the last three years.

On the second part of Mr. Robinson's specification, I will only state that any carbon printer is well acquainted with the nature of a mixture of gelatine and bichromate of potash and its manipulation after the action of light.—Believe me, sir, to remain, yours respectfully, J. Schmidt.

23, *Elton Place, Bishopston, Bristol.*

RECOVERING GOLD FROM OLD TONING BATHS.

Sir,—Having been, for some considerable period, a peruser of the Photographic News, and a perpetual admirer of our photographic art, I am of an opinion that the readers of your valuable Journal may be interested in, the mode by which I recover chloride of gold from my toning solutions.

After replenishing my bath for some considerable period until ultimately it becomes useless, for convenience and economy I deposit the solution in a glass bottle—which, by-the-bye, holds 430 fluid ounces. I place on the fire a crucible which contains five ounces; filling up from the bulk of solution until evaporated to dryness. This leaves metallic gold with a little chloride of silver. To separate this compound into its elements I dissolve the chloride of silver by ammonia, which leaves the gold a brownish powder. The chloride is then precipitated by nitric acid, and, with some borax, is put into a crucible and reduced; after which it is converted into nitrate of silver in the usual manner. J. Powell.

Biddestone, St. Peter's, Chippenham, Wilts.

PHOTOGRAPHY AND MOONLIGHT.

Sir,—What a very wonderful mare's-nest the *Times* art critic has discovered in "Col. Stuart Wortley's collection of photographs taken by night," as described in such grandiloquent language in the extract from the *Times* which appears in your last number! Photographers, of course, know that the said moonlight effects are all produced by daylight and sunlight, and that there is no moonshine whatever about them excepting the *Times*' description.

That such pictures can be produced at night by any (at present discovered) means is impossible, but they are easy by day to any photographer of cultivated artistic taste, who will only watch his opportunity and study the ever-changing beauty of autumnal clouds.

Nearly, if not the whole, of Col. Wortley's beautiful series of studies of clouds were taken in Guernsey in the autumn of last year. Whatever poetical titles Col. Wortley may choose to affix to his pictures, I have yet to learn that he has ever represented them as being "taken by night."

This is another instance, to add to the many already recorded, of the ignorance of outside art critics, who profess to be—and are, to a great extent—the teachers of the public in matters artistic respecting photography generally.

Now, because a moonlight effect is produced by daylight, I suppose we shall be told that Col. Wortley has made use of some trick or "dodge;" yet such is not the case, as such effects are perfectly natural and common to the observant eye at certain seasons of the year near the sea coast.—I am, sir, yours, &c., Lux in Nubibus.

March 1st, 1870.

Proceedings of Societies.

Liverpool Amateur Photographic Association.

The usual monthly meeting of this Association was held on Tuesday, the 22nd ult., at the Free Public Library, William Brown Street, the President, Mr. John Henderson, in the chair.

The minutes of the former meeting having been read and passed, a letter was read from the Secretary of the Philadelphia Photographic Society, accompanying a number of prints sent for exchange.

On the motion of the Rev. G. J. Banner, seconded by Mr. Mawdsley, it was resolved that three of the photographs be selected by the council to be placed in the album of the Association, and the rest competed for by the members.

A vote of thanks to the Philadelphia Society, proposed by Mr. Green, and seconded by the President, was unanimously passed.

It was announced that the prize print sent by Messrs. Robinson and Cherrill would, at the recommendation of the council, be given at the last meeting of the present year for the best instantaneous picture; or, failing that, for the best year's work.

It was arranged to send contributions of prints to the *soiree* of the Manchester Photographic Society, on the 28th ult., and 1st instant; and also to the Naturalists' Field Club *soiree* of the 11th proximo. Mr. Green undertook to forward the former, and Mr. Hughes the latter.

Mr. Lewis Hughes consented to give a lantern exhibition at the next meeting, 29th March, to which members were to invite their friends.

A highly interesting series of micro-photographs by Mr. Thomas Higgin was kindly exhibited by him in the graphoscope, and were most deservedly admired.

Mr. R. C. Culley showed some pleasing photographs of Eastern scenery.

The meeting then adjourned.

Oldham Photographic Society.

The usual monthly meeting was held on the evening of Thursday, the 24th ult., Mr. G. **Hall** in the chair.

The minutes having been read and confirmed,

Mr. **Beverley** read a paper on gallic acid in collodion, and experiments for rendering collodion more sensitive.

A parcel of prints received in exchange from the Philadelphia Photographic Society were handed round for examination. Amongst them were many fine landscapes possessing clouds and good atmospheric effects. All the specimens were much admired.

The attention of members was called to the arrangements of the Manchester Photographic Society, at which most of the members expressed an intention of being present.

AMATEUR PHOTOGRAPHIC ASSOCIATION.

A COUNCIL meeting of the Amateur Photographic Association was held on Friday, February 25th, at 12, York Place, Portman Square, T. SOPWITH Esq., M.A., F.R.S., &c., in the chair.

The minutes of the last meeting having been read and confirmed, the following members and subscribers were elected:—The Hon. C. Ellis; Antonio Brady, Esq.; Dr. Watling; Capt. C. Sturt; W. Newmarch, Esq., F.R.S.; F. Stevenson, Esq.; J. Caldwell, Esq.; J. Lee, Esq.; J. S. Lloyd, Esq.; G. Hutchinson, Esq.; J. McAndrew, Esq.; T. Culver, Esq.; Mrs. Sopwith; Mrs. Stayner.

The SECRETARY then read a letter from His Grace the Archbishop of York, expressing His Grace's regret at having been unable to attend the annual meeting for the award of the prizes.

The SECRETARY then laid before the meeting mounted copies of all the prize pictures, and Mr. Shadbolt, who had been unavoidably absent when the prizes were awarded, expressed his cordial approval of the selection which had been made.

At the proposal of Mr. Glaisher, it was decided that a set of the prize pictures should be exhibited at the next meeting of the Photographic Society. A. J. MELHUISH, *Hon. Sec.*

FRENCH PHOTOGRAPHIC SOCIETY.

A MEETING of the Society was held on the 4th ult., M. DAVANNE in the chair.

M. AIME GIRARD reminded the members of the resolution passed last year to the effect that facilities would be afforded by the Society for the interchange of photographs between members and foreign photographers, and proposed that any applications in reference to exchanges should be exhibited in the meeting room of the Society.

The PRESIDENT read a note from the Minister of Fine Arts sanctioning the establishment of a photographic exhibition in the Champs Elysees during the present year.

M. HERMAN KRONE, president of the Dresden Photographic Society, forwarded a copy of the new journal "Helios."

M. DESPAQUIS submitted some new carbon or pigmented paper of various tints, and likewise some coloured collodion paper.

M. MONTAGNA forwarded a communication in reference to the production of landscape backgrounds without having recourse to painted screens. His method is to pose the sitter in front of a false screen of a suitable description, and, when sufficient exposure has been given to obtain a good portrait, to remove this screen as rapidly as possible, when there is disclosed behind a white background upon which an enlarged photograph is depicted by means of a lantern. As a matter of course the curtains of the studio are drawn close as soon as the false screen is removed.

M. DAVANNE and M. BRIOIS both stated that M. Humbert de Molard had devised a similar plan about seven years ago.

Two notes upon heliochromy, presented by M. Poiree and M. Ducos de Hauron, were postponed till the next meeting.

The MARQUIS OF MAISON called attention to a method of printing upon ivory by employing a thin sheet of that material coated with collodio-chloride of silver.

Several members observed that the process described was already practised in England.

M. CAMUZET gave the results of some theoretical experiences with pyroxyline. He explained that this material was by no means a definite compound, and therefore an absolutely correct formula could not be given for it, its composition depending upon the nature of the raw cotton and mode of conversion. The pyroxyline always contained a greater or less quantity of foreign matters, and was soluble to a certain extent in the silver bath and likewise in water. The constitution of the sensitive film and of the photographic image were speculated upon by M. CAMUZET, who propounded some ingenious theories in regard to the science of photography.

M. AIME GIRARD trusted M. Camuzet would continue his researches, and more especially those in regard to the analysis of the component parts of pyroxyline.

M. DAVANNE feared that on account of ill-health M. Camuzet would be obliged to abandon his interesting researches.

M. CAMUZET made a further communication on the subject of treating photographic prints to allow of their being retouched and coloured, suggesting a solution (one or one and a-half per cent. strength) of silicate of potash for washing the picture. If aniline colours are afterwards to be employed, a little acetate of ammonia is added. Silicate of potash added to the bath will also endow the same with qualities similar to those possessed by a gelatine bath, the following formula being recommended:

Sulphate of iron	10 grammes
Water	250 cub. cents.
Deliquescent silicate of potash ...	3 ,,
Acetic acid...	6 ,,

M. CAMUZET likewise stated that he had been successful in readily bringing about the dissolution of pyroxyline in wood spirit when this latter had been purified by distillation over quick lime. The fibres of the gun-cotton behaved in a manner similar to that exhibited by them in an ether-alcohol mixture; they swelled to three or four times their ordinary size, then assumed a pulpy state, and finally dissolved.

M. L'ABBE LABORDE made some remarks upon the same subject. He said acetone rapidly dissolved gun-cotton, its solvent power being superior even to a mixture of ether and alcohol, because some descriptions of gun-cotton which fail to dissolve in those mixed liquids entirely disappear in acetone. A large quantity of water may indeed be added to the solution without entirely precipitating the gun-cotton; the liquid, indeed, resembles more an emulsion than a solution. It is stated that wood spirit is capable of dissolving pyroxyline, but this property is due solely to the presence in the spirit of acetone; for if the acetone is separated from the spirit, the latter loses its virtue, and, moreover, if spirit be added to an acetone solution of gun-cotton, some of the latter material becomes precipitated. As far as experiments had shown, no practical use of acetone in photography had yet been discovered.

M. AIME GIRARD explained an apparent contradiction in the papers of MM. Camuzet and Laborde by pointing out that the wood spirit of the former gentleman, although purified, would still contain acetone, as this is one of its constituents.

The ABBE LABORDE made some remarks on the recent eclipse photographs of Mr. Morton, calling attention to certain exaggerations in the contrasts due to phenomena pointed out by the Abbe in 1867.

M. DAVANNE'S report on last year's exhibition was read.

The accounts of the Society were submitted.

The proceedings then terminated.

PHOTOGRAPHIC EXHIBITION AT MANCHESTER.

THE annual *soiree* and exhibition of the Manchester Photographic Society was held in the Memorial Hall on Monday evening last, and proved a great success. We subjoin some details from the *Manchester Examiner*, from which it appears that the display exceeded, in point of numbers and excellence, that of any preceding year, and it possessed some features of peculiar interest.

This excellence, our contemporary remarks, may be accounted for by the wise judgment of the committee in admitting only the, of the contributions that were sent in; but still the collection on view exceeded 500 specimens of the photographic art. These included photographs, phototypes, carbon prints, and pictures coloured in oil. The carbon prints were an especial feature. The many failures that have occurred during the last ten years in reducing that branch of the art to what may be termed a commercial enterprise, appear to be well compensated for by recent successes, as instanced in the very extensive collections, by the Autotype Company, contributed by Messrs. T. Agnew and Sons, and comprising views of Oriental scenery, taken by Mr. Frank Mason. Good autotype selections from the engraved works of Sir Joshua Reynolds. Similar collections from the old masters, showing the actual colours in which their world-famed works were drawn. A splendid "Ecce Homo," and forest scenery, including a capital view of Cadzow Park, and the chase of the mountain bull in olden times.

There was an extensive collection of photographs by Mr. Vernon Heath, of London, whose contribution of clouds and skies could not fail to be of much service to the general artist, whose study has hitherto chiefly depended upon the impression of first sight, but who has now, thanks to photography, the fleeting skies secured for him, as it were, *en permanence.* Mr. Heath's "Clouds during a September gale" was much admired. Mr. O. G. Rejlander contributed a large number of exquisitely-executed photographs from every-day life, amongst which we may particularly instance those entitled "Catching" and "Caught," "Adding insult to injury," "The wayfarer's wife," and "Have a tune, Miss?" Mr. W. England, a London artist, has sent a number of beautiful Swiss views; Messrs. Robinson and Cherrill, of Tunbridge Wells, showed some good instantaneous specimens; Mr. A. F. Lafosse, of this city, had some fine photographs done on glass; there were some highly-finished collodio-bromide views by Mr. J. Henderson, of Liverpool; several capital faces and moonlight pieces from nature, by Colonel Stuart Wortley; specimens of colouring in miniature, by Mr Joseph Wake, of King Street, Manchester; photo-crayons, by Warwick Brothers, Manchester; some meritorious carte and cabinet portraits, by Mr. A. Smith, London. Among other attractions of the exhibition were a splendid direct landscape, 30 in. by 21 in. (the largest in the exhibition), by Mr. T. C. Earle, Worcester; and an exquisite Art Union prize combination picture, "Stolen Moments," by Mr. Hubbard, of London, and which deserved a far better position than that it occupied on Monday. There were also paintings in oil, photographed by Mr. Eccles, Bury, and painted by Mr. G. N. Jenkins; a stereoscopic collection, contributed by Mr. Hampson, Piccadilly, and others; photographs of machinery, photographic chemicals, &c. Amongst the other contributors were Mr. Netterville Briggs, Leamington; Mr. Robert Atherton, Manchester; Mr. James Mudd; Mr. S. W. Dobson; Mr. Alfred Ford Smith; Mr. Abel Lewis, Douglas; Mr W. D. Sanderson; Mr. W. Wauo, Douglas; &c.

Talk in the Studio.

Obituary.—We announce with regret the death of Mr. Bingham, an English photographer long resident in Paris. Mr. Bingham was one of the earliest photographers, and, unquestionably, one of the first experimentalists with collodion. He was a chemical assistant to Faraday when Schonbein first introduced his discovery of gun-cotton to this country, and, being an amateur photographer, he shortly after commenced experiments with collodion. Mr. Bingham was well-known for his admirable photographic reproductions of paintings, and for the system he initiated of purchasing copyrights of paintings for the purpose of publishing photographic reproductions of them. By this means he was brought into intimate contact with the first Parisian artists, many of whom we have met at his house. He was the first to introduce Mr. Woodbury's photo-relief process into Paris, eventually selling it to Messrs. Goupil, and retaining a right to use it himself. In Messrs. Goupil's hands it is becoming a great success. Mr. Bingham has for some time been in indifferent health, and died in Brussels a few days ago. He was about fifty years of age.

The Photographic Society of London.—The next meeting of the Photographic Society promises to be exceedingly interesting. It will be held at No. 9, Conduit Street, W., on Tuesday evening, 8th inst., at 8 o'clock, when Mr. W. J. Stillman will read a paper on the Theory of Development, and Mr. R. H. Courtenay will describe his new systems of photo-printing. Mr. Stillman has been unusually successful in the use of the Liverpool dry plates, and attributes much of his success to his method of development. Mr Courtenay is an old experimentalist in photo-mechanical printing, and cannot fail to have something interesting to communicate.

Lantern Exhibition of Photographs.—An exhibition of photographic slides by means of the magic lantern, accompanied by music appropriate to each subject, was conducted at Melton Mowbray, a few evenings ago, by Mr. C. A. Ferneley, consisting chiefly of transparencies from his own negatives. The idea of adding the charms of music appropriate to or associated with the scene is a good one: it appears to have been well carried out, and to have been very successful.

Photographic Lecture and Exhibition of Views.—Last week, on the evening of Tuesday, at the Town Hall, Camelford, and on the following night at the schoolroom, Tentagel, Mr. Hayman, of Lauuceston, gave a lecture on "Photography; its History and Chemistry," followed by an exhibition of dissolving views from a variety of negatives of remarkable places in Devon and Cornwall. They were very beautiful, and the whole affair was a great success. The proceeds will be devoted to the fund now raising on behalf of our at one time contributor, "The Practical Man."

Photographic Secrets.—We learn from our Philadelphia contemporary that one of the secrets of the present time vended amongst American photographers at prices ranging from four dollars to twenty-five dollars, according to the gullibility and liberality of the customer, is the method of whitening collodion positives with bichloride of mercury.

Astronomy and Photography.—Mr. Jabez Hughes delivered last week the first of two lectures on the Solar Eclipse of last year, before the Isle of Wight Philosophical and Scientific Society, illustrating his subject with the photographs taken in America.

Indecent Photographs.—A few days ago, at Bow Street, after the general proceedings at the court were over, Sir Thomas Henry presented Inspector James Braunan, E division, with a check for £5 out of the police reward fund. The learned magistrate said that he and his colleagues considered Inspector Brannan deserved some recognition for the manner in which he had captured the traders in indecent publications, prints, photographs, &c., in Holywell Street and Wych Street. For many years past he had displayed great efficiency in his vocation, and richly deserved the tribute offered him. Inspector Brannan acknowledged the gift with thanks.

Action of Chlorine upon Absolute Alcohol while Exposed to Direct Sunlight.—MM. Streit and Franz state, in *Journal fur Chemie*, that while engaged in making hydrate of chloral with absolute alcohol, direct sunlight accidentally fell upon the apparatus, the temperature of the contents of which was 62°. The continued action of the sun's rays caused a series of sharp detonations, accompanied by very bright lightning-like flashes inside the apparatus; the fluid, previously quite clear, became black, a blackish powder was separated, and the temperature rose to 78°. The authors repeated the experiment with artificial light, and found that magnesium light, the light emitted by a mixture of sulphide of carbon and deutoxide of nitrogen while burning, electric light, and the light emitted by the ignition of a mixture of chlorate of potassa and sulphur, when ignited, produce the same effect. The products of the decomposition of the alcohol were not further investigated, but exhibited a most frightful stench, and a deep reddish brown colour.

Portraits of Drunkards.—The *Evening Standard,* quoting a paragraph in our last, on the proposal for distributing amongst publicans the photographs of drunkards, in order that their drinking habits may be checked, says:—"Whether the encouragement of photographic art, by the establishment of such a national portrait gallery as is here proposed, is a collateral object with the worthy doctor who has originated the idea we will not venture to say, but certainly the demand for cartes-de-visite would be very active, long before the public houses were supplied with portraits of all the drunkards, and the barmaids would succumb to pressure on the brain in their perpetual search through the voluminous albums to determine whether or not the features of thirsty customers whom they might suspect were recorded in the photographic black book. The indignant disputes which would take place when a respectable applicant for a modest glass of sherry was taken, in consequence of a casual resemblance, for a confirmed drunkard, would be incessant, of course, but that might be a trifling inconvenience. The worst difficulty with which the public-house keeper would have to contend would arise from the fact that the portrait of a man taken when he was sober might fail completely in identifying him when he was 'disguised in liquor.' Imagine, moreover, the consequences which might ensue if malicious practical jokers contrived to forward to the neighbouring public-houses, for insertion in the drunkard's album, the portraits of respectable friends. The author of the system himself might hear that his own benevolent countenance was gibbeted in the fatal volume, and if he remonstrated he might be suggestively reminded that perhaps he had forgotten the occasion on which the portrait was taken."

New Use for Photographs.—A writer in a contemporary seems to be alarmed at the probable result of the progress in photo-mechanical printing, and suggests, as the only possible mode of using the plethora of portraits, that they should become substitutes for wall papers. He says:—"Ladies and gentlemen who keep albums and cultivate the portrait fever should rejoice in the discovery of the new process of photo-lithography, by means of which photographs are to be multiplied to almost any extent. and at merely nominal rates. If this sort of thing goes on we shall be able to paper the walls of our rooms with the likenesses of special friends, which will be so cheap and so plentiful that no one will think of going to the expense of frames for them. Besides, as everybody with any pretensions to respectability will, of course. keep a good stock of his or her portraits always on hand, as we take new friends to our bosoms an exchange will be one of the first proceedings, and then, on reaching home, we can look for an obsolete friend—one who has borrowed money or lent us some, or has, in some other way, dropped from our circle of acquaintances—and paste him out forthwith, substituting the new picture for the old. Only it will hardly do to practise this sort of thing in a small room, the walls would soon be so thickly covered."

Worth Knowing.—*Punch* says:—"Perhaps it is not generally known that one of the greatest improvements in photographic portraiture can be traced back to the celebrated French philosopher—Des Cartes."

Un Coup de Soleil.—A photograph.—*Fun.*

To Correspondents.

Studio.—A very great improvement may be effected by extending your north side light. Cut up as the north side now is into a number of small windows, much light is lost. Make the whole of the north side into one window reaching to within one and half feet of the ground, and within four feet, say, of the background end. The red bricks from which reflections occasionally trouble you may be whitewashed with great advantage. We do not recommend any additional glass in the south skylight.

M. F. L.—We do not know of any trustworthy portrait of Lady Mordaunt which has been published. We have seen two or three so-called portraits, but we have doubted their genuineness. A very fine one was taken by Livitzky of Paris, but it has not been published, we believe. We have not seen it, but it has been described to us by a trustworthy judge as an exceedingly perfect photograph of a very beautiful woman, whose picture might be regarded as an emblem of purity and refinement, suggesting the

"——image of some marble saint,
Niched in cathedral aisle."

One of the photographs published as Lady Mordaunt is a portrait of a coarse, or even ugly, woman.

W. M. Crouch.—You could not make for yourself a solar camera much cheaper than you could buy one. In general construction, of course, it is like an enlarging camera. It has no dark slide or focussing screen, a screen in the room where the camera is placed serving that purpose. It requires a condenser and reflector. As a rule, the solar camera is not of much service in this country, as so little sunshine can be depended upon, and it is useless without sunshine. You may, without much difficulty, produce enlarged negatives, or, better still for your purpose, you may produce enlargements on collodion, and transfer them to paper. Such a camera as you describe will answer that purpose. There are various simple methods of exposing. You may uncover the negative or the lens; if the latter, a flap-shutter over it with a string running over a pully and hanging outside the camera might easily be applied. If you can afford it, we should recommend Solomon's enlarging camera with magnesium lamp. You will find a description and drawing of a good enlarging camera on p. 422 of our Twelfth Volume.

F. W. T.—The Autotype Company can successfully print from such negatives as you mention. We do not know their terms. We will examine the prints, and return them. We felt satisfied that the paper you have tried last would answer your purpose best. See answer to M. F. L. We have not seen portraits of the other parties in the suit. The last edition of Hardwich's Chemistry edited by himself is the sixth. The seventh is the last published.

W. J. A. G.—Thanks. The fact you mention is interesting. It is better to shake off habits which you are satisfied are bad. In acquiring information it is well to avoid doubtful sources, otherwise right and wrong become mixed up in your mind, and you cease to possess certainty or trustworthy convictions.

Ignorant.—There is no work which explains technical terms such as you mention; the information is chiefly scattered over the pages of journals. We shall have pleasure in explaining any which you do not understand. 2. No one has yet adopted the plan, we believe, of letting out apparatus for hire. If such a plan be adopted, it will, doubtless, be announced in our pages.

Albion.—By false perspective we presume you mean lines not meeting in one common vanishing point. Perspective may, however, be false because it is unnatural in effect, and suggestive of falsehood. The violent perspective, giving undue enlargement to foreground objects, and an exaggerated effect of distance, is false. This is produced by the use of lenses of too short focus. The true rule for securing a truthful effect is to place the print at the same distance from the eyes as the lens was from the sensitive plate; but that becomes impossible where lenses of extremely short focus are used, as the eye cannot see with distinctness things placed too much within its focus.

C. Ferneley.—Thanks.

T. Gulliver.—Many thanks. The plan will do well, and will admit of the statement of all interesting points of photographic experience. We shall commence early in spring. See answer above. We should have had pleasure in sending one if we could. We shall look with interest for the details of the copying camera.

L. M. N.—We have seen one or two examples before, all from Italy. The result is very effective, and, so far as we can see, easily produced. The extreme brilliancy of the surface is due to the combined effect of enamelling with collodion, and then submitting to heavy pressure in producing the convex surface. In our next we shall enter into some detail of the mode by which such results may be produced.

Bifacial Medallions.—Mr. Hemery requests us to state that the applications for examples of the *bifacial medallions* mentioned in our last have been so numerous that the supply of some must necessarily be delayed.

T. M. T. (Torrington Square).—You will find a series of articles describing all the methods of photographing on ivory in our last Volume. Our last issue contained the information you require on photographic enamelling.

F. B. D.—We rarely devote much space to the subject of producing collodion positives, simply because the process is so little practised, and so few photographers are interested in the matter now. We shall have pleasure, however, in affording you information on any point in connection with the subject you may require. The term "alabastrine photographs" was employed to designate collodion positives whitened with a preparation the composition of which was a trade secret, but was sold as "alabastrine solution." Positives whitened by bichloride of mercury resembled them, but were not the pictures described as "alabastrine" by the originator of the term. The chief difference consisted in the creamy white of alabastrine pictures, and the bluish white of the others.

An Amateur in Difficulties.—Your letter did not contain the faulty prints on which you require advice. Send them, and we will give the matter attention in our next. The age at which collodion is ripe entirely depends on its constitution. A simply iodized collodion with an alkaline iodizer is generally quite ripe enough within two or three days of mixture, and often useless a month afterwards. If it be iodized with a cadmium salt, three months may elapse before it is ripe. If it have bromide of cadmium as well as iodide of cadmium in full proportion, it will keep for years, and is better twelve months old than when newer.

A Practical Man.—We are requested by the Rev. Prebendary Kinsman to acknowledge ten pounds for the "Practical Man," from "A Helper of Old Age."

E. S. Lauder.—The letter has been duly forwarded.

Gallic Acid in Collodion.—Mr. Bovey writes to point out an error in his last. He is made by the printer to say that gallic acid is the *best* of the many accelerating agencies. This was an error, and should have been the *least* of the many agencies, &c.

W. T. Bovey.—Thanks. We shall look out with interest for the subject.

Erratum.—On page 81, in Mr. Martin's letter, a printer's error occurs. It is stated that a pressure of *one foot* is used for the oxyhydrogen light. *One foot* is a printer's error. *One cwt.* (one hundred weight) being intended.

J. Martin.—In our next.

Several Correspondents in our next.

Photographs Registered.

Mr. Brothers, Manchester,
Five Photographs of Dr. Fraser.
Messrs. W. and D. Downey, Newcastle,
Photograph of Prince Albert Victor and Prince George.
Photograph of Mr. Santley.
Photograph of Madame Sinico.
Photograph of Prince Albert Victor of Wales.
Photograph of Prince George of Wales.
Photograph of Princess Louise of Wales.
Mr. Franklin, Deal,
Photograph of Oil Painting, "Wrecks off Walmer."
Mr. G. P. Lee, Cardiff,
Photograph of Rev. J. Fordyce.
Mr. R. H. Preston, Penzance,
Three Photographs of J. T. Blight, Esq.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 601.—*March* 11, 1870.

CONTENTS.

	PAGE
Experiment and Suggestion.—Accelerators in Collodion	109
New Photo-engraving Process	110
Echoes of the Month. By an Old Photographer	110
Foreign Miscellanea	112
American Correspondence	113
Staining Sensitive Films. By Wm. Blair	113
On the Difficulties Attendant on Photography in India, Applied to England, and How to Overcome Them. By Wm. Harding Warner	115
Photography in Germany. By Dr. Hermann Vogel	114
Correspondence.—Mr. England on Dry Plates—Practical Value of Dry Plates—Gallic Acid in Collodion—Photo-mechanical Printing	117
Proceedings of Societies.—Photographic Society of London—Bristol Photographic Society	118
Talk in the Studio	119
To Correspondents	120

EXPERIMENT AND SUGGESTION.—ACCELERATORS IN COLLODION.

That "familiarity breeds contempt," and that it is possible for some to become so accustomed to enjoy great privileges that they cease to appreciate them as privileges, are facts that scarcely need affirming. We are perpetually reminded of this by examples occurring in the photographic world. Photographers in this country we consider in many respects a peculiarly privileged race as compared with photographers in almost any other country. There is not, for instance, a single necessary and ordinary process in photography which, in this country, is fettered by patents, notwithstanding that the present position of the art depends so much upon a vast series of discoveries and inventions, great and small, which in their origin have cost the originator much time, thought, labour, money. Photographers enjoy the use of the mass of these things without money and without price, and when any valuable novelty is by rare chance patented, there is generally a number of objectors ready to protest against this infraction. In the United States, professional photographers for many years groaned under the load laid on them by the owners of the bromide patent, and thousands of dollars were, year after year, paid for the right to use bromoiodized collodion. At the present time an attempt is being made to tax, in a similar manner, all photographers who save their waste and recover their silver by any method of precipitation.

Another form of privilege enjoyed by photographers in this country is the readiness and freedom of communication which has prevailed, both in societies and through journals. The art has attained its advanced position chiefly in virtue of this fact; discovery and invention, experiment and suggestion, have, without hesitation, been poured into the common treasury; and this privilege has become so familiar as not only to have ceased to be appreciated, but, in some instances, it seems to be absolutely resented. Not long ago a gentleman read at the Photographic Society a paper describing a number of ingenious modes of double printing, which had been acquired during long experience in that branch of the art. Whereupon, a well-meaning, but certainly mistaken, gentleman entered his protest against the unnecessary publication of these "dodges," on the ground that it was unwise to publish the secrets of the art, and that practical photographers could find such things out for themselves. The result of that protest was to deprive photographers generally—at least, in some degree—of the spontaneous and ready aid in the form of suggestion and information which they had hitherto enjoyed. More recently, a skilful practical photographer published in our pages an article in which he set forth certain theoretical considerations on the means of securing increased sensitiveness in collodion plates, and, as illustrating the purport of his remarks, he gave one example of the working of the ideas he had been suggesting, and mentioned that an experiment, in which gallic acid had been added to collodion, justified his views, a decided accession of sensitiveness having been the result. Upon this, another gentleman—estimable and well-intentioned, we feel assured—prepared a paper for a society, which was devoted chiefly to an account of his own failure to secure any advantage with gallic acid, and to the condemnation of persons publishing suggestions which had not been worked out to certainty.

There are a few reflections which these facts suggest, both of a special and of a general character. First, in relation to the special case to which we have referred, Mr. Bovey suggested rather a possible and probable means of securing rapidity, and concluded by an account of one experiment, in which he had secured a measure of success. Mr. Beverley, at the Oldham Society, having prepared one sample of collodion with a trace of gallic acid, and failed to secure any advantage, proceeds, in a paper before a society, to condemn a writer for devoting a long article to a subject which might have been exhausted in the nine words, "add a trace of gallic acid to the collodion." This gentleman overlooks the fact that the purpose of the article was not to say anything of the kind, but to suggest a theory and plan of experiment, of which the addition of gallic acid was but an example. Mr. Beverley thinks that "persons who try experiments should be sure, not only that they have made a discovery, but that the discovery is an improvement, before they place the results of their experience before the public." Has Mr. Beverley acted upon the plan he recommends? Has he assured himself, not only that he had made a failure, but that there was no possibility of securing success, before he brought his experience before the public? Scarcely, we think. Mr. Bovey has succeeded in getting rapid pictures in very dull light; and one person's success proves a possibility, which the failure of twenty persons does not disprove. Mr. Hardwich, moreover, records as his experience that gallic acid gives increased sensitiveness to collodion. If Mr. Bovey had made one or two experiments, and upon such a basis announced a "new process," and stated, or implied, that it was a thoroughly worked out and completed process, those who were misled by such a statement would have some reason to complain; but where any experimentalist publishes an account of his operations, basing thereon suggestions for the experiments or practice of others, the only fair and natural course is to take such suggestions *quantum valeat*, either disregarding them, or repeating the experiments as inclination and opportunity may arise. If, after fair trial, either success or failure result, and the photographer be a man of capacity of expression, he will do well to publish his results, and so contribute to the common stock.

Every photographer should remember how much he is indebted to the gratuitous teachings and suggestions of others, especially through the agency of journals and societies. A very small portion of each photographer's stock of knowledge of his art is the result of his own discovery; very few photographers have learnt their art by means of a regular apprenticeship, the bulk of the information having been obtained as a result of the free intercommunication of knowledge which has been one of the special characteristics of the photographic community. We invite photographers, on all occasions, freely to state the result of experiments, and make suggestions which may appear important in advancing the art. We prefer to see carefully tested and thoroughly worked out ideas; but we should regret that a good idea should lie dormant because its originator had not time to work it out, and did not feel at liberty to suggest something which he had not verified beyond question. Let readers, as we believe the majority do, receive such suggestions in a proper spirit; test where they can; reject if they choose; report upon, favourably or unfavourably, if they will; but be careful how they ungratefully and unfairly impugn the motives or condemn the conduct of those who voluntarily and gratuitously offer their aid and suggestions. It is unwise to decline the aid of a staff because it is not a crutch.

On the subject of accelerators we have little to say at present. The subject is full of interest; and it is not to be supposed for a moment that the ultimatum of sensitiveness has yet been gained. Whether it will be secured by means of organic additions to collodion is a question which admits of much discussion, and still leaves room for much experiment. Many years ago we went through a very extended series of experiments in connection with this subject, in which the addition of gallic acid, pyrogallic acid, glucose, glycerine, sugar, essential oils, fatty bodies, camphor, and various other substances were added to the collodion. With several of these some degree of acceleration was obtained; but our general conclusion was that the amount of gain was more than counterbalanced by the tendency to change and uncertainty introduced. In the use of bromides and the character of the pyroxyline we found the only trustworthy improvement and absolute gain. But conclusions arrived at upwards of a dozen years ago in an art like photography are always worth re-examining; and we hail the effort of each careful, persevering, and enthusiastic new worker in old fields with pleasure and welcome, and hence we aim to protect from unfair animadversion all communications which result from careful thought and honest experiment.

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NEW PHOTO-ENGRAVING PROCESS.

We have pleasure in announcing a new photo-engraving process, with half-tone, of great promise, which has just been patented by Mr. Woodbury. The one example which we have seen strikes us as amongst the most perfect examples of photo-engraving we have hitherto met with. The process is based upon Mr. Woodbury's photo-relief process, part of the operations in which are employed to produce the printing-plate in the new method, which may indeed be regarded as a modification of the old one, although giving different results, printed at a different press, and with a different ink.

In order to make the matter clear to the reader not familiar with the technics of intaglio printing, we must briefly explain one or two details. Most of our readers know that copper-plate printing is effected with a plate having an image in intaglio; that is, the design is cut in or sunken, not in relief. They also know that Mr. Woodbury, in his photo-relief process, prints from a similar plate. It might naturally be asked, therefore, why Mr. Woodbury's intaglio plate might not be used in the ordinary process of copper-plate printing instead of requiring a special gelatinous ink and special presses. There are several reasons; but there is one of an especial and primary character: such a plate from a subject with half-tone has no ink-holding capacity. In a subject with half-tone there are broad spaces of flat or continuous tints out of which the ink would be wiped when used for copper-plate printing. It should be remembered that after inking a copper-plate it is wiped to remove all the ink which does not fill up the sunken design; and, if the plate have no grain or ink-holding spaces, the ink is wiped out of the widest and shallowest spaces, destroying much of the image. If, however, these spaces have a grained or cellular texture the ink is held by the grain or celles, and is not wiped out.

Various methods have been adopted to secure the requisite quality in photo-engraved plates, with greater or less degree of success, which it is not necessary to refer further to here. The method adopted by Mr. Woodbury is analogous to some of them; and, so far as we can judge from what we have seen, more efficient than the majority of them.

Like many other valuable discoveries, Mr. Woodbury's new process owes its origin partly to accident. About twelve months ago Mr. Woodbury gave us one of his gelatine reliefs which had a singular defect. He was in the habit of adding a little colouring-matter to the gelatine from which his reliefs were formed, as an aid to examining their progress in development. On this occasion, from some unexplained cause, the colour, instead of diffusing itself as a flat tint or stain, granulated, and communicated to the gelatine relief a surface resembling that of a very fine aquatint plate. When this effect was first produced we discussed with Mr. Woodbury the chances of utilizing it as an aid to producing a photo-engraved plate for copperplate printing. The idea then canvassed, Mr. Woodbury has since worked out to the issue we mention. From a granulated relief an intaglio in lead or type metal is obtained by hydraulic pressure; but as such a plate would be too soft for valuable service in the mode of printing employed with copper-plates, it is desirable to proceed further. This soft metal plate is therefore placed in the battery, and a copper-plate in relief obtained; from this, as a mould, another intaglio plate is obtained in the battery. This last is the printing plate, and to give it enduring qualities it is submitted to the *acierage* process, whereby it acquires a steel face, so that a large number of impressions may be obtained without sensible wear.

How far this new process will bear out, in general practice, all that it now seems to promise, time alone can tell; but, so far as we can judge, a valuable addition is secured to the mechanical printing processes connected with photography.

Since writing the above we have seen specimens of a process in some respects analogous, patented by Mr. Courtenay, and described at the Photographic Society. We shall hope to see further examples before forming a decided opinion of the value of the process, as those we have seen scarcely suggest any great advance on what has already been achieved. The pressure on our space compels us to delay details until our next.

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ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Tunicare—Progress of Photo-Mechanical Printing—In Memoriam—The Carbon Process: Its Progress, Economy, and Permanency—Societies.

Every suggestion which decreases labour and increases certainty of cleanliness in relation to the troublesome operation of cleaning plates is well worthy of attention by photographers. A German gentleman has recently recommended the addition of a little castor oil to the collodion as a means, not of cleaning the plate, but of rendering the photographer comparatively independent of the absolute cleanliness of the glass; but I must confess that I should hesitate, in taking a subject in which I was anxious to succeed, to rely upon collodion so treated for giving me immunity from the consequences of a dirty plate. One of the best aids to cleanliness which I have found has been the use of a dilute coating of albumen after a moderately careful cleaning of the plate. Any appearance of defect from dirty plates seems rarely to occur where albumen is used. But I have recently been trying a new preparation which has been introduced to relieve the photographer from trouble in this respect. It bears the somewhat odd name of "Tunicare," and, so far as I can at present judge, promises to be very efficient. The plate is first cleaned, with moderate care, with hydrochloric acid and water, next swilled with the new preparation, and then put away to dry. The prepared side is coated with the collodion, and I have seen no appearance of dirty plates since I have used it. Whether it will have any effect on the bath remains to be proved; at present I have seen nothing to make me doubt it.

In my last "Echoes" I remarked, as a ground for regret, that in this country photo-mechanical printing made so little headway, every attempt to introduce any of the processes having been marked by failure, disaster, and loss. A gentleman in another journal quotes part of my words, and comments thereon, apparently disputing my statement as to the non-success of these methods in this country. He says that I am "not well posted in the news of the day," and that my "Echoes" are but the echoes of what I read in the journals, and not of what takes place "in the great ateliers of the art." He then proceeds to state that MM. Goupil are working Mr. Woodbury's photo-relief process successfully. As the journal in which my "Echoes" appear announced that fact many months ago, it did not require much research in the great ateliers of the art. But here is the oddity. I regretted that photo-mechanical processes, from some cause, had failed commercially "in this country," and, to prove the information erroneous, the writer says that one of the processes is successful *abroad?* I distinctly stated that "in almost all the countries of Europe some of these processes are regularly worked in commerce;" and to prove that I am "not well posted," he states that Woodbury's process is worked in France; Fie! fie! Mr. Would-be-Censor! Is this your idea of editing a *gentleman's* photographic journal? I am deeply interested in the progress of photo-mechanical printings, and if I am not moderately well posted in its progress, I have little excuse for my ignorance, seeing that I remember that almost any process of this kind, of importance, from the Woodbury-type to the Albert-type, was not only first announced in these pages, but examples first presented to photographers through the same medium.

The allusion to MM. Goupil and Co. reminds me of a loss which photography has recently suffered in the person of Mr. Bingham, one of the earliest, as well as one of the most capable, English photographers. He has been settled for many years in Paris, and was the first to establish, and successfully carry out, the system of photographic reproduction and publication which MM. Goupil have since carried out on such a large scale. It was Mr. Bingham who first saw the value of Mr. Woodbury's process as a means of art reproduction, and having purchased the French patent, subsequently sold it to MM. Goupil. Old photographers remember the valuable little handbooks of photogenic manipulation issued by Mr. Bingham when he was engaged in the London Institution. Photographers generally are familiar with the exquisitely fine reproductions of the paintings of modern French masters which Mr. Bingham produced and published. He was one of the earliest workers with bromo-iodized collodion and iron development, and to the free use of bromides he attributed much of his success in reproducing paintings in colour. Meissonier would occasionally paint subjects in black and white expressly for Mr. Bingham to copy; but as the latter gentleman himself once remarked to me, he had become so accustomed to master the difficulties of colour, he would almost as soon photograph a painting in colour as one in monochrome. You refer in your brief obituary notice to the pleasant reunions of French artists and literary men in Mr. Bingham's *salon*. I have more than once had the privilege of being present on such occasions, and cannot but feel sad at the death in his prime of a photographer who unquestionably did much to give his profession a high standing in the art circles of Paris.

One of the most interesting subjects for observation and speculation in connection with photography is the progress of carbon or pigment printing, somewhat slow, undoubtedly, but not less undoubtedly sure. I am often amused at an innocent, not to say verdant, question, which is addressed to me when I express my conviction that carbon printing must eventually become general, if not universal: I am asked, "How is it, unless there is some unexplained hitch in the process, that so little progress has already been made in its general adoption?" I generally reply by asking of my interlocutor: "Have you adopted it?" "No," is the reply; "I am waiting until I see it become general." "And does it not occur to you that if every one does this the progress must necessarily be slow?" I rejoin. "Yes, but surely if the patentee or proprietors of the patent had no misgivings they would push it more," returns the objector. "To what end?" I am compelled to ask, adding, "Already the proprietors, the Autotype Company, have it in active operation, and all their staff at all their establishments are fully employed. It is true they are extending their facilities very largely; but there is every probability that their own special work will keep them well engaged. They steadily announce their willingness to grant licences, to give instruction, and afford every facility to photographers desirous of practising the process. Surely they are not concerned to do more: the rest must depend upon enterprizing and conscientious photographers availing themselves of their privileges."

Another form of objection I may as well mention has often struck me as especially shallow. It is urged that carbon printing is more costly and more difficult than silver printing. To which it is simply necessary to reply that, except by the patentees and M. Braun, of Dornach, it has been tried on such a limited scale that no fair comparison or conclusion can be drawn. The latter gentleman has stated that in his experience the cost of carbon prints is one-eighth less than that of silver prints. The Autotype Company have not made any statement on the subject; but I believe they undertake important work at the price of silver printing. These are practical answers to the question of difficulty and expense.

But all commonplace objections sink into insignificance before a novel and refreshing one recently made by a gentleman in another journal. He has come to the conclusion that carbon prints are no more permanent, perhaps less so, than silver prints! He admits, however, that he has been asleep, and, having scarcely ceased rubbing his eyes during waking, he probably perceives things indistinctly—sees "men as trees, walking." The argument of our awakening sleeper stands thus: "The basis of carbon prints is some species of gelatinous substance. This substance is organic, and therefore very liable to change and decay." Precisely: clearly and aptly stated. Let me state a parallel argument. The basis of all engravings, all books—indeed, of almost all printed and written documents—is paper. "This substance is organic, and therefore very liable to change and decay." *Ergo*, "theory is against the suppositional permanence of books and engravings!" Perhaps it will be urged that paper chiefly consists of cellulose, amongst organic substances one the least liable to decomposition. Good: then let us try the argument again. The basis of all written documents, except those on paper—especially of documents of value, the durability of which is of vital importance—is parchment, a "species of gelatinous substance. This substance is organic, and therefore very liable to change and decay!" Parchment is simply insoluble gelatine; the organic basis of carbon prints is simply insoluble gelatine.

The theory which is inimical to the permanency of the one strikes at the durability of the other. Photographers may rest tolerably well satisfied, then, on this score. Properly executed carbon prints have a probable tenure of existence equal in duration to that of all printed books, all engravings and all written documents. All title-deeds, all leases, all laws, all the written framework of society, may fade before the carbon print has perished. Nevertheless, organic substances are doubtless liable to decay. Organic, quotha'! Aye, and inorganic too. A poet, of a nationality which probably the writer in question will respect, has said—

> "All mortal things shall fade away;
> The sun himself shall die."

How much more his works? But that is no argument against the permanency of carbon prints. But then the only good processes are hedged in by the rights of property. Well, yes, so are the goods of my butcher, baker, grocer, and a host of others who have manufactured or purchased the goods I desire to possess. I must confess I admire the pluck of the gentleman who has recently made these objections against carbon; but he is certainly more plucky than cogent or logical in reasoning.

The societies have been active. The London Society held its annual meeting, and reported a gratifying degree of progress: an increased number of members, improved finances, greater activity and interest, and a generally improved tone of vitality. The Journal of the Society, which for some time had become a heavy charge instead of a source of profit, has to subside into "transactions," published during the months of session only. If this had been done much earlier, it would have saved the Society much loss and anxiety; but one can well understand the clinging fondness for a journal which had done so much good service in years gone by, which made the council delay such a step. Mr. Highley read a paper on the magic lantern, and showed some ingenious apparatus.

The South London discussed the means of produced natural landscape backgrounds to portraits taken in the studio. Various ingenious plans were suggested; but it is surprising what a degree of doubt prevails as to the means of producing certain results, until some expert enters into an elaborate description, and then of course every one knew it before.

The Bristol Society discussed Mr. Barton's knapsack tent, and the especial importance of securing means of ventilation in tents generally. This Society's proceedings have been unusually interesting of late. The members of the Edinburgh Society have had their "annual fish dinner," lucky dogs!

Foreign Miscellanea.

Notwithstanding the general publicity which is given to all new discoveries and inventions by the numerous European photographic journals, it is surprising how many well-known matters are claimed anew by investigators. A striking instance of this oft-recurring circumstance is afforded in Mr. Johnson's improved carbon process, the manipulations of which were described by that gentleman a year ago. At the recent meetings of the French Photographic Society, several points connected with Mr. Johnson's process have been brought forward as novelties; and in some of last month's journals appears a recommendation from M. Leon Vidal, to the effect that all negatives should be provided with an opaque border, to facilitate the development and transfer of the pictures, a course already followed by every carbon printer by the Johnson method.

M. Ducos du Hauron continues his investigations in regard to the production of colours in photography, and has written another note upon the subject, which the *Moniteur de la Photographie* reproduces *in extenso.* He has likewise forwarded a further transparent specimen of his process, which was exhibited by M. Marion at the last meeting of the French Photographic Society.

The results of M. Camuzet's researches on pyroxyline, which he described recently before the French Society, are of great importance to photographers, and it is to be hoped that the investigation may be continued. Not the least interesting portion of the communication are the analyses of various pyroxylines, showing their suitability, or otherwise, for the preparation of collodion. The results given showed that Liesegang's papyroxyline was an excellent material for the purpose, as indicated in the following statement; the four samples of pyroxyline quoted were dissolved in an ordinary mixture of alcohol and ether, and then precipitated by the addition of water:—

	Flocculent matter.	Powdery matter.	Quantity dissolved in the water.
No. 1. Cotton of good appearance	0·31	0·15	0·54
No. 2. Ordinary cotton	0·27	0·13	0·60
No. 3. Powdery cotton	0·27	0·07	0·66
No. 4. Liesegang's papyroxyline	0·60	0·05	0·35

A series of pictures, taken by Frank Good, of the Suez Canal, were exhibited at the Berlin Society for the Advancement of Photography, and called forth the praise of the members.

The *Photographisches Correspondenz* gives another illustration of the Albert process, representing the fourth edition of 1,000 each of these pictures which have been presented to its subscribers. This last example does not bear the title of Alberttype, but is simply called a permanent light-print.

Professor August Freund, in the *Correspondenz,* recapitulates the operations for manufacturing pyroxyline, recommending the employment of tissue or filter-paper for the purpose.

The Chevalier photographic plane-table is, according to M. Meydenbauer, of Berlin, by no means susceptible of such general and practical applications as have been claimed for it.

M. Sternberg gives some hints upon the production of Adam-Salomon portraits, the adoption of which, in the Rhenish provinces, appears to be making way.

The pupils undergoing instruction in the Albert process at M. Angerer's studio in Vienna are said to have discovered a method for removing the collodion film and photographic image from the negative by the employment of a gelatine mixture; if this is really practicable, it will much facilitate the Alberttype manipulations, by rendering the production of a reversed negative unnecessary.

According to *Licht,* photography is being employed by the Prussian Government for the same purpose as in the War Department in this country, for the production, namely, of records of shot-and-shell practice against iron plates. A shield constructed by M. Gruson has, it is said, been destroyed by the effect of ten shots from a 96-pounder gun at 200 paces.

Dr. Stolze has an article on the working up of old silver baths, and M. Kleffel on the vignetting and graduating of prints, in the same journal.

A contradiction to some of the statements made by Dr. Vogel in his paper on Errors of Perspective in Photography has been made at the Berlin Photographic Society by Dr. Stolze.

In the *Photographisches Archiv* appears a long communication, by Dr. Liesegang, on artificial illumination and enlarging.

A correspondent from Hamburg speaks hopefully of the prospects of the better class of photographers in that town. From nine to fifteen shillings are charged for cartes-de-visite, and from twenty-four to thirty shillings for cabinet pictures per dozen.

M. Brand, of Heidelberg, urges photographers to consider again the question of employing transparent paper for negatives, and trusts that an effective method will soon be found for rendering paper transparent. He suggests whether it might not be possible to take pictures upon albuminized papyroxyline, and subsequently to treat the same with alcohol and ether in such a way as to give a transparent tissue for the support of the image.

Intending exhibitors at the Paris Photographic Exhibition should remember that no application for space can be received by the Secretary, M. Laulerie, 9, Rue Cadet, Paris, after Tuesday next, the 15th inst. The exhibition will open on the 1st May, and close in October at the latest, exhibitors being requested to fetch away their pictures within one week after its termination.

AMERICAN CORRESPONDENCE.

Washing Gun-Cotton in Ammonia—Negatives on Ground Glass—Our National Exhibition—Recent Postal Convention.

Washing Gun-cotton in Ammonia.—My attention has been called recently, by Mr. Hugh O'Neil, one of our most eminent photographers, to the advantages of washing gun-cotton, before use, in dilute liq. ammonia. On his recommendation, plates were coated, one end with collodion several days old, prepared in the usual way, and the other end with collodion made after Mr. O'Neil's formula as follows:—

Ether	12 ounces
Alcohol	12 „
Bromide of potass	48 grains
Iodide of ammonia	108 „

The requisite amount of cotton was then weighed and placed in a small dish; to this a pint of water and a drachm of strong liq. ammonia were added, the whole well stirred, and then allowed to stand fifteen or twenty minutes. The cotton was then repeatedly washed until all traces of ammonia had been removed, and then were wrung in a crash towel until nearly dry. Alcohol was then poured upon it, sufficient to displace the water, and then it was added to the alcohol, ether, &c., and, as soon as dissolved, filtered.

The plates were then exposed, twin lenses being used, in order that the trial might be fair and equal. The result was in favour of the *washed* cotton collodion decidedly. While the end of the plates coated with the ordinary collodion was barely timed sufficiently, the other was decidedly *over*-timed, thus substantiating Mr. O'Neil's claim that it would work much more quickly. That alone is a great advantage, but there are others beside. The resulting negatives are of a beautiful colour, fully dense enough, and yet they print quickly and satisfactorily. The qualities secured amply repay one for the extra trouble of washing the cotton, and best of all, the exposure is decidedly accelerated. Mr. O'Neil uses a bath forty to forty-five grains strong, and emphatically recommends the use of iodide of silver, and *not* iodide of potassium, for iodizing the bath. He makes his iodide of silver as follows:—Iodide of potass twenty grains, dissolved in water one ounce; twenty-five grains nitrate of silver, dissolved in one ounce water. On mixing the two, the iodide of silver is precipitated, and must be washed six or eight times before use. This may not be new to many, but there are many good things which are forgotten, and should bear repeating.

Negatives on Ground Glass.—I am looking with interest for something on this subject from the readers of the News. I am not yet able to give you further details, but hope to do so in my next letter. I enclose you a number of prints, however, from ground-glass negatives. You will observe that the effect is pleasing and fine in some cases. It is like most other things; namely, it will not do to apply it indiscriminately for *all* subjects, for while it is, in some cases, an improvement, in others it would be an objection. The effect is hardly equal to that of a retouched negative, but it is superior, I think, to the "mezzotint" process or to printing through a medium, although this might be classed under the latter head. There is none of that inky look in the shadows, or harsh chalky whites, which characterize the "mezzotints," in these. If the subject is well managed and well lighted, the effect is very pretty. These prints are by Mr Rowell; and permit me, also, to call your attention to his tastily gradated backgrounds. "How he does it" I will try and find out hereafter.

Our National Exhibition.—This is the all-absorbing topic with us now, and the exhibition promises to be a grand affair. An immense building has been secured, in which there is an abundance of light, and splendid space for hanging the pictures. And while we call it our National Exhibition, we hope it will be quite *inter*national in its character, for we invite the whole world to join us in giving *eclat* to the occasion. Especially from England and the Continent do we hope for some fine examples of work. We have heard so much through the News of the Conduit Street Exhibition that we are greatly desirous of seeing the splendid works there exhibited. We continually read the writings of your great men, and we hope to see their work at our next exhibition. I enclose you a copy of the official notice to foreign contributors, and trust you may find space to print it. It will not be out of place for me to offer my services in any way to those who propose to contribute, and I will be glad to answer any enquiries concerning the exhibition. Should any of your legion of readers be in this country at the time, I beg them to command me if I can serve them. Our two governments seem disposed to encourage every means by which they may be more closely allied to each other, and surely our profession should emulate so good an example.

The Recent Postal Convention.—*Apropos* of what I have said above, I may mention the recent postal convention, signed by the two governments, and a copy of which I have just received. As this reduces the postage between the two countries fifty per cent., it is a cause for congratulation. I make following extracts:—

"Article 1.

"The postage to be collected in the United Kingdom upon paid letters to the United States, as well as upon unpaid letters posted in the United States addressed to the United Kingdom, shall be threepence per half ounce or fraction of an ounce." * * * *

"Article 3.

"Every international letter insufficiently paid, or wholly unpaid, received in the United Kingdom from the United States, shall, in addition to the deficient postage, be subject to a fine of three pence, to be retained by the British Post Office; and every international letter insufficiently paid, or wholly unpaid, received in the United States from the United Kingdom, shall, in addition to the deficient postage, be subject to a fine of six cents, such fine to be retained by the U.S. Post Office."

Very truly yours, **Edward L. Wilson.**

Philadelphia, February 15th, 1870.

STAINING SENSITIVE FILMS.

BY WM. BLAIR.

The use of *stained* sensitive films is a department of photography which, I rather think, has not yet been greatly cultivated, and yet I am mistaken if it will not be found a source of interesting experiment. No doubt the number of preservatives or organifiers that have been tried in the preparation of collodion plates, wet and dry, for use in the camera, has been very great—their name is perhaps "legion," and their *colours* have been various, ranging from the deep brown of tea and coffee to the limpid transparency of glycerine or gum arabic—but I am not aware that the peculiar colour of any substance has afforded the motive for its use, although perhaps the deep colour of some substances has rather been taken as an objection, and perhaps properly so, to their adoption. It appears to me, however, to be worth while considering whether some advantages may not be gained by the use of certain coloured organifiers, or by having our collodion sensitive films dyed or tinted before exposure to light.

It has for a considerable time been pretty well known to those accustomed to print in pigments that some colours make the tissue more sensitive than others. For instance, a red or yellow tissue is more sensitive on the *surface* than a black one or a dark one of a cold hue, but the effect of the light does not penetrate *so deep*. I have often used a thin layer of red gelatine above a black pigment, and found, on development, the red so fixed, that the black in the deepest shadows underneath would almost wash away before the lights in the red film would begin to dissolve. In fact, the red layer seemed to have absorbed almost all the actinic light, and allowed very little of it to pass through to the other pigmented gelatine behind. In consequence of the circumstance referred to, it is usual for carbon printers, when printing from negatives of strong contrast, to use warm-coloured tissue, because, though more sensitive, the light is kept more on the surface, and a softer impression is thus obtained than could be obtained from a cold black tissue.

We are perhaps apt to think, because *yellow* and *red* are what are called "non-actinic colours," that these would impart non-sensitiveness to substances which might otherwise be very sensitive. But in this idea we are confounding two things that are very different. The effect of a yellow light thrown on a sensitive surface is one thing; the effect of a white light thrown on a yellow sensitive substance is quite a different thing. The yellow screen with which we cover the window of the dark room may form a safe shade, and enable us to work very well behind it with sensitive materials, but that is no reason for supposing that it would not be very sensitive itself, if photographically excited or sensitized.

Theoretically, I would be disposed to say it ought to be more sensitive than a white substance, for a white substance reflects and throws off—or, I might say, repels—the greater part of the white actinic light thrown upon it, whereas a yellow substance catches, as it were, and retains or absorbs all the actinic rays, reflecting only the yellow by which it is seen and distinguished. It is natural to suppose, therefore, that those rays of light which are caught and retained by the sensitive substance, if they have the power of affecting it at all, will do so in a greater degree than those that are reflected or repelled. The arrow that strikes, but glances off my cranium, will not produce the same effect as if it penetrated the skull and stuck fast in the brain.

This may be rather a homely theory, and not quite satisfactory to those who hold to the undulatory nature of light; but I shall not fight about the theory with those who are determined to dispute it. I merely call attention to the fact that, in one department of photographic work, *colour* is well known materially to influence sensitiveness, and I ask, why should it not do so in other departments? I intend, by-and-bye, to try some little experiments in this side-path myself with collodion plates, and invite others, who are disposed, to do so likewise.

Perhaps the best way of carrying out the experiments I am aiming at would be to have some strong colouring matter mixed with the collodion. In that case it would require perhaps to be as neutral and inoffensive in the silver bath as the collodion itself; or, in the case of preparing a dry plate, after sensitizing and washing, the plate might be dipped into a solution that would give the collodion a deep tinge or dye; but it would not answer to allow this dye to remain in the form of a layer or coating on the surface, as it would screen the sensitive film from the light, and simply act as a shade. Even in this form, however, we may find a use for it, to be afterwards noticed. The conditions I am aiming at, at present, are these, that while the body of the sensitive film should be deeply impregnated with colour, so as to intercept all actinic light, the *surface* should be quite bare, to receive at once all the light thrown upon it. For instance, I have now in my box a plate prepared about a week ago, which, after sensitizing and washing, I covered with the juice of black sugar. After this had stood upon it for some time I washed it off, but on placing it in my box beside another plate prepared with tannin, I found that the black-sugared plate remained of a much darker hue than the other. This plate has not yet been exposed. I may here mention, however, that in the course of the previous week I exposed a plate under very trying circumstances, which had been treated with black sugar *not washed off*, and got a good negative. It was a *snow* view, and the sun shone almost right in front, so that the sky had to be shaded down to shut the sun out from burning a hole in my camera. A full exposure was given as for a tannin plate—indeed, rather longer. The development was slow, but satisfactory, the distances and half-shades being well rendered. This organifier, however, seems to impart a certain greasiness to the film, that can scarcely be removed by frequent washings, and which, I believe, impedes to some extent the development. A tannin plate exposed under nearly similar circumstances, but not so directly against the sun, was, apparently, over-exposed, and did not give a good negative. These plates were both exposed *through the glass*, so that there was no interruption of the light by the surface coating of the preservatives used. And even though some substances may have the effect of retarding the impression in the camera, they may still be useful for taking subjects where the contrasts of light are otherwise difficult to manage.

Another important advantage that may be expected from colouring the collodion is the prevention of halation and solarization. The plate above referred to, which I have now in my box, is so brown *in gremio*, that I shall expose it with confidence against very strong light without fearing any of these results. Gamboge, purple lake, or any other deep coloured pigment or dye, may be found to answer a similar purpose.

I generally expose my negatives through the glass. In that case it will be seen that it is unnecessary to wash the coloured matter from off the collodion surface, but it may be allowed to dry on, as it is not that side which is presented to the light; but when the collodion side is presented to the light it will certainly be necessary to wash it off the surface, unless a very thin coating is used, and in that case it may be found advantageous to allow it to drain to the side which is to be exposed to the sky. By attending to this it will be found that the colouring matter will be deepest at that side by a very regular graduation, and will thus act as a sky shade.

Bridgend, Perth, March, 1870.

PHOTOGRAPHY IN GERMANY.

BY DR. HERMANN VOGEL.

Keeping Negatives—Large Heads Card-size—Retouching Negatives—New Atelier.

The chief question of discussion at the last meeting of our Society was on the splitting of films. Much has been said as to the cause of this annoyance, but it certainly is not exactly understood yet. The thoroughness of the washing and the quality of the water exercise, undoubtedly, a great influence. The question, however, is, how can this evil be prevented?—and many parties have proposed to cover the negative with an amber solution, and to varnish afterwards. This would have another advantage, it would protect the collodion films against the action of the varnish. The amber furnishes an excellent surface for retouching, and the retouch would itself be protected by the last varnishing. Until, however, the amber varnish has stood the test of time, its claims to freedom from cracking must remain conjectures.

Another proposition—*i. e.*, to remove a quarter of an inch of the collodion film all around the plate, and to varnish afterwards—seems to offer advantage. It would certainly give greater protection, and prevent moisture from insinuating itself at the edges between the film and the glass. Time alone can settle these points definitely.

I made lately a curious discovery in regard to this very subject. One of my Aden negatives commenced to show signs of cracking all over the surface, so fine, however, that they did not interfere much. I tried to get rid of them by exposing the plate to vapours of alcohol, but they remained as before. Finally, I retouched the sky on the varnished side with india-ink containing gum-arabic, and put the negative away. This was some months ago; I looked at it again a few days ago, and found the plate covered with cracks, except the places where it had been retouched. This seems to prove to me that a covering over the varnish will prevent the splitting of the film. The best expedient to get tolerably good prints from cracked negatives is rubbing the plates with lampblack. It fills up all the fissures, and makes them for the time being disappear.

Next to the question of the preservation of the negative, the manipulations of the retouching process always claim our attention. This branch of the business becomes from day to day more important, in the same proportion as the passion for large heads in card-size spreads amongst the general public. It is, indeed, a mania that gives a great deal of trouble to the photographer. There are heads with all the modern accessories, as chignons, curls, flowers, laces, and all the other trimmings; they make a beautiful picture, particularly when one knows how to sit, and is accustomed to being photographed. Actresses make splendid models; you can always make something out of them; their toilet is generally excellent, and their skin has undergone such a thorough "positive retouching," that the artist has very little trouble. The case with ladies from private life is quite different. They are often awkward in their movements, or even resist the arrangements of the artist; they object to being handled, and show a skin which, in spite of all the artifices of illumination, looks, in the negative, like a freshly ploughed field. Negative retouching has to come here to the rescue, and this becomes more difficult as the size of the head increases.

Formerly photographers were generally through their day's work with the setting of the sun; now you find them late at night at the retouching desk, to retouch the negatives that have been taken during the day. In large establishments, generally, only one head of the four negatives is retouched for want of tone.

Last fall I reported to you the plan of Grasshoff, to rub the negative with cuttle-fish, and produce a surface that will take lead-pencil marks. The process has proved perfectly successful. On the ground surface the lead-pencil marks are placed with the same care as on paper. All the negatives taken by Loescher and Petsch are treated in this manner, that is, not the whole negative, but the face only, which is the only part that is subjected to retouching. Some varnish, however, when rubbed with cuttle-fish, will become smooth instead of dull. In such cases I take finely-powdered pumice-stone. That gives the best surface, and a hard pencil answers very well. Grasshoff uses the so-called silver pencil (metallic lead mounted in wood), on account of their cheapness, and the points do not break.

Messrs. Loescher and Petsch have recently erected a new *atelier*, in which they have endeavoured to embody the results of past experience in regard to what to secure and what to avoid.

The new building is situated in the garden of the house, but no trees or shrubbery can have an injurious effect on the light, as for a distance of one hundred and fifty feet the space is perfectly clear.

The principal glass room faces nearly due north, and is protected by a two-storey house from the direct rays of the sun. The copying room, the main side of which also points north, is likewise protected against direct sunlight. The studio proper is of the following dimensions: 35 by 17 feet floor, and height from 10 to 14 feet. The inclination of the roof is 4 feet in 17, and is sufficient to remove the accumulated dirt whenever a rainfall occurs. The moisture on the inside, caused by condensed vapour, runs off through a small slit between the roof and the sides. In this way the gutters, which are generally placed below the supports, could be dispensed with. At the junction of the two glass surfaces is a slight iron rod to carry the rollers for the illuminating apparatus, which absorb very little light. The northern wall and about three-fourths of the roof are glazed. The plates of glass are 24 inches square, and only sixteen pillars were necessary as supports. The central pilllars are three-eights by 3 inches; the side ones are an inch thinner. In this way a broad mass of light from the north became available, which, in some particular instances, only had to be modified. It became necessary to invent an arrangement which would exclude every particle of side-light, and reduce the source of light to one opening only. Ease in the management and certainty in the effect were necessary, durability and a pleasing appearance desirable. These considerations induced Mr. Petsch to substitute, for the old-fashioned curtains of doubled muslin, frames covered with some opaque material, which were easily movable, and avoided all the shortcomings of the former arrangement. The old arrangement with curtains never excluded the light absolutely, while, at the same time, they would, in course of time, hang down loosely, leaving openings between the different strips, the light from which would be annoying to the sitter, and interfere with a proper illumination, not to speak of the dust and unsightly appearance.

With the frame arrangement the supports for the glass became available as carriers for the frames, doing away with all the rods, wires, rings, and cords of the old establishment. The frames are made of light iron bands, covered with linen which is made water and light-tight by a coating of glue, chalk, and oil paint.

I hope to furnish some further details of this new *atelier* on another occasion.

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ON THE DIFFICULTIES ATTENDANT ON PHOTOGRAPHY IN INDIA, APPLIED TO ENGLAND, AND HOW TO OVERCOME THEM.

BY WM. HARDING WARNER.*

Having lately been asked to prepare a paper on some popular subject connected with photography, which should embrace many interesting points for discussion, I bethought myself of a letter just received from an amateur in India, detailing all his difficulties and troubles, and asking for a reply during any portion of leisure that I might have. I should state that my friend is no tyro in our art; that many of his pictures (landscapes) are well selected, and the work, considering the difficulties, well and creditably performed; that his military duties take up much of his time; and that he has been compelled to work in what we Englishmen would term the worst part of the day, viz., the hottest. He mentions, in one instance, in the middle of development, having to put down the plate and rush out of the tent, so hot was it; further, that it never rains, not even a shower, for seven months in the year; that collodion turns a deep port-wine colour in six weeks, even if kept in a cold place; that his bath only allows of a dozen or so 7¼ by 4½ plates dipped in it, and then it becomes contaminated with organic matter; that in intensifying, after the first development, the silver and citric acid added to the pyro becomes muddy, even after sixty grains of citric acid have been added, and a teaspoonful of acetic acid to two ounces of solution; that on varnishing the plate, everything goes right until the time for printing arrives, when the film comes away entirely upon the paper; that after coating two plates with collodion the rest of the bottle is of a gelatinous nature, from the rapid evaporation of the ether; that in printing, no good colour can be got in the prints, even if they remained in the toning solution an hour and more; that when they *did* tone properly, every vestige of the same was removed in the fixing bath, and the print had a dirty red washed-out appearance; that he had experienced great difficulty in taking some of the natives, whose skins varied from brown-black to copper-red, the white turban they wore (each caste having a different mode of putting or twisting it round the head) being such an extreme contrast that, while it was possible to get the face by long exposure, the turban came out a splotch of white, without detail, while if the turban and its details were displayed, the subject or nigger had no face at all; that in the rainy season all difficulties disappeared in printing, and so with collodion, bath and developer, and varnish, in a measure.

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* Read before the Bristol Photographic Society.

Now, here is a heap of queries, many requiring much thought before answering. True, a general reply may be given to all of them; but to give a good sound reason why such and such is the case, and then to suggest the remedy, requires an experience founded on the knowledge of light and temperature, and also of the structure of many of the substances named. To enter into these in detail would occupy too much of your time; but I feel sure that good may be gained by a cursory glance at them, both by the veteran photographer, and also by the beginner. Although it is India I am about to expone or work for, yet in summer in England we often experience intense heat, sufficient to put many of us *hors de combat*.

The great enemies our friend has to contend against are heat, glare, want of dampness or moisture in the air, on the one hand; and on the other, a proper collodion and a method of managing it, tent, bath and developer, and varnish (these being too important to be left out, the negatives intensified with pyro if left unvarnished in the glass house, becoming of a deep black all over, and completely useless. Of this a few words afterwards.

And now as to heat. Just place yourselves in a temperature of 145°, the midday heat of India. Why, in England, during our hottest summers, I have worked with the perspiration rolling off my face on to the plate; and though personally inconvenienced, I have had no difficulty in coating my plate or in getting a succession of good pictures day after day, even the working in a tent, and all obviated by the most simple appliance: a refrigerator for the collodion—*i. e.*, a cylinder of zinc covered with cotton, and kept moist with water—being placed over the bottle; a bag of white house flannel saturated in the same way, in which the bath bag was plunged, the bath being thus kept cool by evaporation; a white calico cover, wrung out with water, being thrown over the tent, the same being freshly wetted from time to time, and so an even balance being kept up, a greater sensitiveness was given to the chemicals employed, so that the feeblest radiations of light were recorded on the film. Thus also were removed many of the evils spoken of by our friend. Gelatinity of the collodion, perfect ease in coating, an even sensitizing of the film, the bath lasting much longer, in intensifying an equal deposit of silver over the whole surface, to say nothing of the pleasure of feeling sure of success, failure being the exception, not the rule. But heat acts in another way, which I must just mention before passing on. It eats up, as it were, the light, causing the very glare which is our next point to consider. There is many a day in summer here, when the sky is cloudless, that the light is at its minimum as to actinic force. True, you can take pictures, but they will not readily intensify, and detail in shadow will be almost *nil*. Again, when there has been a succession of hot days, and the air has become charged with a decomposed oxygen, and very, very dry, there will be observed a peculiar red or copper-coloured glare. To remedy this in large subjects is an impossibility, but in near objects and in close scenes it is possible to modify and partially get over the difficulty by using a simple appliance in the shape of a garden syringe.

The magic effects produced by this treatment are wonderful if applied to objects in the foreground; it gives a force and power which are oftentimes the making of a picture. But to pass on. I think I have shown by my last illustration the use of our next point: "want of dampness or moisture in the air." During a very hot day it has often, doubtless, been observed by you that the leaves of cauliflowers, brocoli, and cabbage plants look flagged and drooping, while in the early morn they were crisp and beautiful; and so, as the day declined, they in some measure regained their original condition. Further, that in the intensity of frost in winter they had precisely the same appearance as to drooping during its continuance, but that on the temperature rising they regained their original positions. Now this would lead one to believe that extreme heat and extreme cold were synonymous terms, both acting alike. Just for one moment let us look at their action on a sensitive collodion plate. Take the cold first; given a view sunlighted on a frosty day, with a road in shadow in the foreground; the portion in immediate sunlight and the sky will readily develop after a good long exposure with a hot water developer, but the road will be nowhere, barely distinguishable, and all the lights and shades will be exaggerated contrasts. Just so is it in India in the extreme heat of the day. The turban comes out as a dab of white without detail, while the native's face is readily depicted, but only obtainable with what we should term a long exposure, viz., a minute and a half. In England we should have, taking the same landscape scene as proposed above, weakly defined shadows, having indefinable distance with a uniform flat tint over all, printing anything but nice. Take the same view early in the morn, when it is cool and there is a dampness in the air, and you have everything in perfection. Then, again, heat produces wind or draught, moving trees, &c. Just so in India. I remember in July, about four years ago, having to take some views on the Wye, which were to be done by a given time, being wanted for the Chester Assize. It was fearfully hot and windy, and one of my pictures was a large willow tree, the leaves of which, as you know, hanging from its slender branches, are readily moved with the slightest zephyr. Two attempts did I make at it in the daytime; both were failures. At length I succeeded by taking it at 3·30 A.M., giving a long exposure. At that early hour it was cool and damp, and, therefore, no wind, and I got my tree without a movement. This picture was afterwards enlarged up to fifteen by twelve, and a fine enlargement it made.

Having thus hastily glanced at temperature, before quitting this portion of our subject, let us pause for a few moments to consider that important item without which all our efforts would be vain—light. Light in India is one thing; light in England is another. Without entering into the discussion of what light *is*, and from whence it first proceeded—which may, perhaps, form the subject of another paper—let us look into the nature of light in India as compared with our own. My friend speaks of no rain for seven months of the year. We have before stated that coolness and moisture conduce to actinism, and thereby to the making of good photographs. And in the rainy season he says everything goes well; and I have had abundant evidence from him that fine clouds can then be produced, thus confirming what I have said. But what is most complained of is the impossibility of getting detail in pictures taken during the hot season—which there constitutes the major portion of the year—except by comparatively long exposures of one minute and a half; and also of obtaining portraits of the natives with their white turbans and tawny faces. Now all this shows that there *is* a difference between our light and theirs. Wherein, therefore, does it consist? In my idea, simply in this, that whereas with them the light shines through an unclouded atmosphere, which is practically semi darkness, with us it is reflected by lovely and beautiful clouds, which increase its force, enabling us to pourtray all the detail in each flower, leaf, and tree, with ease and fidelity. Now a question may be asked: Why semi-darkness? Surely, if you have the sun's rays pouring down upon your subject, what more could you need? The reply to this is also simple. It has been found that the higher you ascend from the earth in a balloon the less actinic force you have; which may be explained that above the atmosphere of the earth is a region of total darkness and extreme cold, and the nearer you approach thereto the less light you have to work with. In England, as compared with India, we work with what may be termed polarized light. It may be explained thus:—Take a dull morning overhead without wind; a scene reflected in the placid waters of a pool will appear doubly bright and more distinct than the subject itself. Why? Because the excess of diffused light is taken up by the depth of the water; and, in proportion as it is so taken up, does the water reflect *the true colour* derived from the objects reflected in it. And this leads us to consider how best the portraits of the natives may be taken, so as to give the dark face and the white turban each its proper exposure. In the sun, as I have shown, this is an impossibility; in the shade, during the sunny season, this is next to impossible, except very early in the morn; during the rainy season, when clouds are about, would be the only chance of success, and even then much would depend on the chemicals and the method of development. Every colour throws off its own rays, which affect the sensitive film in different proportions; and it is a knowledge of this which enables a good photographer to give exactly the proper exposure to his subject. One rule may always be laid down: "Expose for the shadows, let the high lights take care of themselves;" these last must be managed in development.

(*To be continued.*)

Correspondence.

MR. ENGLAND ON DRY PLATES.

Dear Sir,—Will you allow me to make a correction of that portion of Mr. Moll's article on dry plates in the last number of the Photographic News relating to myself. He there states that of all the negatives taken by me in the neighbourhood of the Seven Mountains and Heidelberg, not one has been published; for no other reason, apparently, than that the whole were failures. Now, in the former locality I only exposed for one view, the weather not being favourable; but that one was, nevertheless, a success, and has been published in the Rhine series.

With respect to Heidelberg, I have not been nearer than thirty miles of that famed locality, a distance, I believe, too great for the longest focus lens to reach; therefore Mr. Moll will, I am sure, quite understand why I have no views of that place.

In conclusion, I may remark that I have by no means abandoned dry plates, having worked nearly the whole of last season with them; and I may, perhaps, on some future occasion, have some remarks to make which may be of more interest to your readers than this hasty correction of Mr. Moll's statement.—I remain, dear sir, yours obediently,

W. England.

PRACTICAL VALUE OF DRY PLATES.

Dear Sir,—In your last impression of the Photographic News I noticed an article on the "Practical Value of Dry Plates." I have, for the last three years, used exclusively Mr. England's plan of working the collodio-albumen process, and can confidently recommend it.

I have not, on any occasion, had a defective plate, if that same plate has had a proper amount of exposure; and I believe it is almost impossible for a collodio-albumen dry-plate to fail if it has had the necessary exposure. The exposure I generally give, with a seven-inch focus Lerebour view lens, for a moderately lighted subject, is from three to five minutes on a 7½ by 4½ plate.

I trust you will insert this in your next publication on behalf of the value of a dry plate. Also excuse me for thus intruding on your space.—Yours respectfully,

Manchester, March 7th, 1870. An Amateur.

GALLIC ACID IN COLLODION.

Sir,—One sometimes hears of individuals awaking to find themselves grown famous; but as my News usually reaches me at eve, I had not slept when I for the first time became acquainted with the honour bestowed on me at Oldham. In reference thereto, whilst thanking Mr. S. Beverley for his notice of my humble self, I should have experienced much greater pleasure had he controlled his pen and kept it more within the bounds of accuracy.

Had Mr. Beverley devoted the most ordinary attention to the article that caused him so much disquiet, he might have secured to himself easement of mind from a paragraph published with the first half of the article, in which it is distinctly stated that I had no perfected process to offer. Furthermore, from the paper in its whole, he might have perceived that I was not advocating the use of gallic acid, nor was I advising on any particular process, but that my sole object was to explain a principle for the guidance of those who vainly seek an instantaneous process from among developers.

If Mr. Beverley failed to perceive this, the omission at once proves his incompetency to judge those on whom he ungenerously heaps his condemnation. He should bear in mind that unsupported assertions are, as a rule, the offspring of ignorance or prejudice, and, if we judge him by his own confession, he is by no means a model experimentalist. I cannot, of course, complain when failures attend a trial of anything I might chance to advocate, but I strongly deprecate the course taken by Mr. Beverley, who, without devoting to the study of his case the few minutes requisite to inform himself of the contents of my article, tried the thing of "nine words" (which apparently was all he understood of the matter), and failed. No real brain-labour followed to ascertain a reason why of the failing, but at once he rushed into writing; and now that writing is immortalized in print that tells the world of what the world knew before. They that fail and faint never should attempt to accomplish a difficult task.

A word, in concluding, for Mr. Seeley. My object in penning an indirect reply to his note was in deprecation of the practice of rushing into print with a revelation of failures before a process has been fairly tried. When, in its earliest days, I experimented with your collodio-chloride process, it cost me hundreds of experiments, with what amount of success you, sir, well know. I had faith in its capabilities because the principle was sound, and the results ultimately proved that I was not deceived. Had I run into print with my first or twentieth trial I should have told a tale of woe, and, by this time, would deserve to be well ridiculed.—Yours truly, W. T. Bovey.

PHOTO-MECHANICAL PRINTING.

Sir,—I trust you will afford me space to reply to the very kindly offered advice of Mr. J. Schmidt, relative to my photo-mechanical printing process. J. S. seems to have had such long and extensive experience in not only practising, but also teaching, a process which would be like mine, only that it is so superior, that it would be ungenerous in me not to offer my thanks to J. S.; and I would wish to say that, as regards the parentage of the idea of producing negatives by a purely mechanical process, such as described in my specification, or the many other methods which have, from time to time, been proposed during the past twelve years or more, I make no claim whatever, as I am sufficiently acquainted with the history of photography to know that such an idea is by no means new. The distinctive claims of my specification are admitted by J. S., in that he says: "Now, sir, the method I employ is on the same principle, *with the exception* that my layer on the glass or other transparent substance is superior to that used by Mr. Robinson." It is this exception that forms the distinguishing feature of my process from that of J. S.; and as to the merits of the fine metallic deposit I employ, and on which J. S. so em-

phatically pronounces an opinion favourable to himself, I prefer to leave the matter in the hands of those interested in the process, knowing such to be better and truer test than any one interested assertion.—Remaining, sir, yours with respect,
J. Robinson.

Dublin, March 8th, 1870.

Proceedings of Societies.

Photographic Society of London.

The usual monthly meeting of this Society was held on the evening of Tuesday, the 8th inst., in the Architectural Gallery, Conduit Street, Mr. J. Glaisher, F.R.S., in the chair.

The minutes of a former meeting having been read and confirmed, the following gentlemen were elected members of the Society: Messrs. J. C. Richardson, W. Grant, and Joseph Paget.

The Chairman announced that the next meeting of the Society would be made special, for the purpose of altering one of the rules. By the existing laws members not resident in England were exempted from the payment of subscriptions, whilst it appeared that they were entitled to receive the Journal of the Society. As the gratuitous transmission of the Journal abroad, with sometimes a heavy postage, was a tax the Society ought not to be subject to, a modification of the rule would be proposed at the next meeting.

The Chairman read a letter from the Honorary Secretary of the Royal Cornwall Polytechnic Society, calling attention to the next exhibition of the Society, and the facilities which would be afforded to photographers. The Chairman, who is an honorary member of the Society, spoke of the great services to art and science which this Society had conferred, and expressed a hope that photographers would give the matter their attention. Mr. Brooko, a member of their own Society present, would be happy to give photographers any information or aid.

The Chairman then directed attention to a large and very fine display of photographs, the prize pictures of the Amateur Photographic Association, and invited members to call and see the other pictures of that Society, now on view in York Place.

Some other photographs for presentation or exhibition were passed round.

Mr. J. W. Stillman then read a paper on development, which will appear in our next.

The Chairman, referring to some remarks in the paper to the effect that photographic action, being produced by the chemical power of the sun's ray, and not by light, precluded any hope of the production of photographs in natural colours, as colour was essentially a result of light, said he altogether concurred in this view, and believed that the laws of light must change before we could hope to secure photographs in colour. The Chairman then related some anecdotes, illustrative of the anxiety which had been manifested in the production of photographs in colour, and mentioned the curious coincidence of certain colours in a negative with the colours of the object photographed in a picture obtained by Dr. Diamond.

The Rev. J. B. Reade did not recognize the word impossible in his dictionary, and, therefore, did believe in the possibility of producing photographs in natural colours. The sensation of colour perceived by the eye was caused by certain undulations of waves of light of different lengths, and when a sensitive surface was found which would receive and register the vibrations thus caused, as the eye did, and fix them permanently, we might hope for photographs in colour. Already some progress had been made, and he had secured some indications of colour in collodion positives.

Dr. Mann, after expressing his high appreciation of the paper of Mr. Stillman, said that whilst he quite agreed that the action produced by light was to set up a vibration in the molecules, he doubted whether that vibration was continuous. He also expressed a doubt as to the reduced silver caused by development being crystalline; he had rather thought it was amorphous, and the product of the reduction of the character of a sub-oxide.

Mr. Stillman said that the metallic deposit was undoubtedly crystalline, as might be seen by the aid of the microscope. In relation to the continuation of the vibrations, he thought the fact that the image gradually ceased to exist proved that the vibrations continued gradually diminishing.

Mr. Hart, in relation to the question of photographs in colour, said it should be remembered that the idea of colour was a sensation made on the optic nerve, whilst the action of light on a sensitive salt was simply a chemical operation, by which reduction was produced.

Mr. Sebastian Davis said that the theory based on the gradual passing away of the latent image would not be borne out in the case of plates where no such passing away of the image occurred. In his own practice, he found that, after a final wash of gallic acid, dry plates would retain the latent image at least eight months, so that in their case the vibrations did diminish or cease.

After some further remarks on the subject of colour, in which the Rev. J. B. Reade, Mr. Davis, Mr. Stillman, and the Chairman took part, a vote of thanks to Mr. Stillman closed the subject.

Mr. R. H. Courtenay read a paper on a New Photo-engraving process, which he has recently patented. He exhibited specimens, and distributed amongst the members some lithographic prints, the impression on stone having been produced by means of a transfer from one of Mr. Courtenay's engraved plates.

The Chairman asked if the process and results were not very similar to those of Mr. Paul Pretsch some years ago.

Mr. Courtenay said that all Mr. Pretsch's plates required retouching by hand. His plates were untouched, and the process was more simple.

The Chairman said he had examples of the work of Mr. Pretsch. both touched and untouched.

Mr. Peter Le Neve Foster had reason to believe that none of Paul Pretsch's results were issued without the work of a skilled engraver, as in that untouched state they were unpresentable. Examples touched and untouched might be seen in juxtaposition in the collection at South Kensington.

The Chairman could positively and unhesitatingly affirm that some were issued untouched. He gave the subject close attention, and had now in his possession a matrix and the negative from which it was produced. No one had been more severe upon photographers than he at one time on the question of touching; and he knew well Mr. Pretsch's operations, and had seen the results in both states.

After some further remarks, and a vote of thanks to Mr. Courtenay, the subject dropped.

The Secretary announced for the next meeting a paper by Mr. Jabez Hughes on the Practical Application of Carbon Printing in Portraiture, and the proceedings then terminated.

Bristol Photographic Society.

Ordinary meeting held Thursday, February 24th 1870, at the Philosophical Institution, Mr. J. Beattie, V.-P. in the chair.

The minutes of the last meeting were read and confirmed.

The Secretary then read a paper by Mr. Harding Warner, on "The Difficulties attendant on Photography in India, applied to England, and how to overcome them (see p. 115). Mr. Warner's paper was illustrated by some very charming cabinet photographs, which elicited general commendation.

Mr. Ennel said he quite agreed with Mr Warner's observation in respect of the necessity in hot weather of having moisture in the air; not, as he thought, that moisture accelerates actinism *per se*, or that it directly causes light to be more diffused or reflected, but it exercises a material influence mechanically on the state of the atmosphere by clearing it from dust by double action; *i. e.*, not only by making air lighter but also by rendering the dust heavier. Dust, we must remember, is not merely that portion of the worn road, &c., which is sent up flying by the wind, for that soon falls down again by its own specific gravity; nor does it principally consist of small particles of worn fabrics, of articles of dress, as might be inferred from the late experiments of Dr. Tyndall at the Royal Institution. No, not so much of the *debris* of *perishable* particles as of *perished* ones. "In the midst of life is death;" nay, it seems as if death were the very condition of life. "Change of matter" scatters us to the winds continually; what we get rid of by brush and comb and by washing is not all; indeed, the microscopically invisible particles are no doubt a considerable item. The same fate is shared by other animals besides. But this is not all; the whole atmosphere teems with life, and therefore with death. And a broiling day seems most favourable for calling forth both. Can we wonder that the whole in the aggregate interposes a thick veil between the source of light and the object to be lighted? Wind does not rend the veil, but moisture drags it down.

Mr. Beattie said he was unwilling to discuss Mr. Warner's paper, because it treated of subjects of great importance, and with much detail. He considered the theories on light and other points of a very important nature, but they were such as would require more time and careful discussion than could be given at a meeting, and would be a more proper subject for discussion in the pages of the photographic paper.

In reply to some remarks of Mr. Ennel, Mr. Beattie said his own opinion was, that on extremely hot days hindrance arose from want of actinic power, the heat itself carrying on chemical action.

Mr. Gillo said that on hot days in summer the same effect is seen as in heated air from a chimney, for air of different density is then about, and this must necessarily have some effect on the light.

Mr. Beattie said he should never expect to get so good a light from the clear sky of a hot summer day as from a sky covered with fleecy clouds.

Mr. Gillo said that the nearer a process could be reduced to instantaneous the better it would be; but

Mr. Barton considered instantaneous exposure bad as a general rule, because the nicety of the balance of chemicals precluded any certainty in the process; and

Mr. Dunmore said that in landscape photographs the edges of moving objects were always blurred, although taken, so to speak, instantaneously.

Mr. Gillo said that one remark in Mr. Warner's paper was liable to be misunderstood—that relating to the use of the garden syringe. This was to moisten the boughs and leaves of trees, that they might come out clear in the picture.

Mr. Beattie thought Mr. Warner in his remarks on gelatine developer should have mentioned the quantity to be used: a small quantity will give good results, while a stronger solution is difficult to work, and never acts well.

Mr. Barton had used gelatine for two years, and then given it up. He found no difficulty in working it. It only made the process easier, while better results could be obtained where it was not used.

Mr. Beattie thought softer results were obtained with it, but

Mr. Barton stated that he preferred a negative that required intensification.

The Secretary exhibited a picture produced by the Pouncy process, sent to him by Mr. Warner for that purpose, and reference was made to the process by which it was produced.

Mr. Dunmore proposed, and Mr. Barton seconded, a vote of thanks to Mr. Warner, which was carried unanimously.

The proceedings then terminated.

Talk in the Studio.

Bengal Photographic Exhibition.—We have pleasure in announcing that the silver medal of the Bengal Photographic Society has just been awarded to Messrs. Robinson and Cherrill for "the best series of six landscapes or portraits taken and printed out of India."

Tunicare.—Many of our readers are by this time familiar with a preparation with this name, the object of which is to reduce labour and secure certainty in the matter of plate cleaning. It is, however, rather a preliminary coating than a plate cleaning solution. According to the instructions, the plate undergoes an easy process of cleaning, and then receives a coating of *tunicare*, which is allowed to dry, and is ready for use, presenting a surface chemically clean. It is obvious that the experimental trials that we can make of such a preparation are not so conclusive as the result of regular practice in professional work; but so far as we have tried the preparation, we find it answers well. We have also had many good reports of it from correspondents. The one drawback which we have had brought under our attention is, that when negatives have to be cleaned off, and the plates used again, it is very difficult, or impossible, to clean the plates if *tunicare* have been used in the first preparation of the plate. This is a point worthy of the attention of the manufacturer, and we shall be happy to receive a hint from him on the subject.

Advertising Literature: Anthony's Photographic Bulletin.—A striking illustration of the importance of photographic journals for advertising purposes is found in the circumstance that wherever such journals do not exist, or where the supply is limited, it becomes desirable for some large dealer or manufacturer to establish a journal as a means of advertising. A few years ago, we received a copy of an Australian journal, which had done us the honour to use our title and reprint various of our articles. It was called the *Australian Photographic News*. It was, however, chiefly devoted to advertising purposes, to which literary information was subordinated, and was circulated gratuitously. We noticed, a short time ago, a Canadian journal of a similar kind, issued by Ewing and Co. A catalogue just published by Mons. Romain Talbot is issued with a literary character and title. The most recent of these ventures is "Anthony's Photographic Bulletin," issued in New York. It is avowedly published for the purpose of "advertising the manufactures and wares of our own firm, and of such other houses as may wish to take advantage of the opportunities it offers." As it "does not profess to be a journal," the publisher will "not be under any obligation to put in any definite amount of reading matter;" at the same time, in the number before us, there is some good original matter, and some reprinted from our own and other pages. We shall, when we have space, make one or two extracts from its pages.

Looking Well as a Photograph.—During the hearing of a recent case in the Probate Court, where it was intended to prove the testator of unsound mind, a witness said, in answer to the Attorney-General, that the photograph put into witness's hand was very like Mr. Hutley.—*The Solicitor-General*: "A man generally looks as well as his photograph."—*The Attorney-General*: "Well, that's not saying much."—*Mr. Serjeant Ballantine*: "No. See 'Vanity Fair.'"

Waterproofing Paper.—The solution of oxide of copper in ammonia acts, as is well known, as an energetic solvent upon cellulose; this property is made use of to waterproof paper in the following manner:—A tank is made to contain the solution just alluded to, and the paper is rapidly passed just over and in contact with the surface of the liquid, by means of properly placed rollers moving with speed. The paper, on leaving, is pressed between two cylinders, and next dried by means of so-called drying cylinders, similar to those in use in paper mills. The short contact of the felty paper tissue with the liquid gives rise to just sufficient solution of cellulose to form an impermeable varnish."—*Chemical News.*

More Indecent Photographs.—At Bow Street, a few days ago, Henry Evans, Castle Street, Long Acre, was charged on a warrant before Sir Thomas Henry with dealing in indecent photographs. Mr. Collette prosecuted for the Society for the Suppression of Vice; and Mr. Abrams defended. The purchase of thirteen slides of an indecent nature having been proved, Inspector Brannan stated that he arrested defendant on the warrant produced. He denied selling any indecent photographs, but alleged that they were studies from nature. A large quantity of objectionable prints was seized, together with piracies of some copyright pictures of Mr. Graves, Pall Mall, and other publishers. Mr. Graves, jun., proved that the picture of "The Nut-crackers," of which many copies were found in defendant's shop, was a copyright. Sir Thomas Henry said he must pronounce the photographs, &c., seized to be indecent, and commit the defendant for trial. It was alleged that a penalty of £70 was pending against the defendant through a charge brought against him at this court some time ago for selling piracies of Mr. Graves's pictures. The defendant was not called upon to pay the fine, as he promised never to sell similar prints again. He was now liable to be called upon to pay those fines. Mr. Abrams applied for bail, and Sir Thomas Henry said he would take two sureties in £100 each, with twenty-four hours' notice of bail.

Poisoning with Bichromate.—A contemporary says:—"That the cure is sometimes worse than the disease was unhappily exemplified the other day in the case of a Scarborough tradesman named Thomas Crump, a silk dyer. It appears that this gentleman had been in the habit, after having become intoxicated, of resorting to chemicals to sober him, and last week he was poisoned by taking bichromate of potass in mistake for the chemical which he usually drank under these circumstances."

Disgusted Thieves.—A burglary took place at Salford the other day, at which the thieves, being disappointed in their expectations, set fire to the house, leaving a note of complaint as follows:—"Dear sir,—Sorry we cannot find your money. We return your likeness (alluding to a photograph which was left in the handkerchief). Bad luck to you that you did not leave some. Good-bye. We've drunk your health with your wine.'

To Correspondents.

ENAMEL.—We do not know of any one who gives lessons in enamelling at present, except Mr. Solomon. Mr. Henderson's process is a secret; he will doubtless give lessons, but it will be for a heavy consideration. His address is King William Street, London Bridge.

YOUNG PHOTO.—To get the silver solution to leave the sensitive plate when it leaves the bath, let the plate drain well, resting one end on a piece of clean white blotting-paper, and, at the same time, wipe the back with a piece of blotting-paper folded up and kept for the purpose. One reason for the solution hanging about the plate may be the character of the collodion. If it be a horny repellent sample, the solution will hang on the surface in drops, which cause stains in developing. If this be the cause, change the collodion, or keep it until it is riper; or you may add a drop of distilled water to each ounce, which will sometimes improve matters. Move the plate well whilst in the bath; allow it to remain a sufficient time in the bath; and drain well on blotting-paper, and you will probably get rid of your trouble. 2. You will find instructions for transferring the collodion film to canvas in an article in our YEAR-BOOK. To avoid bubbles, take care to have sufficient water on the canvas before placing the film thereon to allow a wave of water to flow away when pressed down, and so drive air away before it. A sheet of paper being placed over the film, it is to be well rubbed down. One of the small squeegees used in the carbon process, and in transferring films in Mr. Solomon's method of reproducing negatives, will be found useful. 3. A view lens gives greater depth of definition than a portrait lens, and more even distribution of definition all over the plate. A portrait lens gives a sharper picture, but the field of perfect definition and of perfect illumination is more limited.

J. B. C. F. (Lullesworth).—We should have no hesitation in deciding in favour of the first mentioned, which you distinguish as 1A.

WM. C.—To what extent the loss of your hand will limit your facilities for practising photography we can scarcely say; you, indeed, can judge better than we can. It is undoubtedly a great loss, but it fortunately happens that by practice a single hand acquires rare skill. We shall have pleasure in aiding you by any advice or information we can give you. The smallest studio in which card portraits can be taken may be of the following form and dimensions:—Oblong, with ridge roof; length, 18 feet; breadth, 10 feet; height at ridge, 13 feet; at eaves, 8 feet. Let it stand east and west, so as to secure the dominant side light from the north. On this side 10 feet of glass to within 18 inches of the ground, and 4 feet opaque at each end of this side. The same in the north side of roof. The south side and roof need not have any glass. No glass in either end. 2. We have not tried the use of collodion containing castor oil for the purpose of dispensing with plate cleaning. It is worthy of trial, but we should distrust it. We should never recommend anything of the kind to the student in photography. One of the first laws for the novice at all times to bear in mind is the importance of cleanliness. Many photographers will undertake to give lessons; but we do not know their terms. We believe Mr. Blanchard does. Write to him at 12, Camden Cottages, Camden Road, or at his new studio in Piccadilly, next door to the Royal Academy.

H. L. J.—Enamel powders for use in producing photographic enamels consist generally of various metallic oxides, used singly or in combination, as may be required to produce certain colours. The chief oxides used are those of iron, manganese, copper, cobalt, antimony, uranium, &c. Various fluxes are used; they consist of powdered glass, or powdered flints, borax, oxide of lead, &c., in various forms of combination; but you can purchase these things ready for use very much better than you can prepare them for yourself. 2. The chloride of silver when precipitated by means of hydrochloric acid does not require so much washing as when salt is used; but it is better to wash the acid away by a little rinsing. Nevertheless, it may be reduced without washing. 3. We regret that we cannot give you the required information as to the preparation of modelling clay. We may have opportunity of ascertaining, and will then let you know in this column.

F. G. P. W.—You have probably used the alcohol too strong. Add a very little water to the gelatine after soaking, melt, and then add the spirit, a little at a time; by this method you will get a suitable sizing material.

R. LEA.—All the operations described in Fargier's patent are free to the public, whether they form part of the methods described in the specifications of Swan or Johnson, or not; but the formation of carbon tissue forms no part of Fargier's process. In Fargier's process the mixture of gelatine pigment and bichromate is applied to a plate of glass, and the operation of printing is performed on that glass plate, which is then immersed in warm water to develop, a coating of collodion being employed to support the image of gelatine, pigment, &c., as it floats in the water. One of the chief difficulties in that process, besides that of printing on a plate of glass, consists in the manipulation of this thin floating film. One important point in Swan's patented improvement consisted in getting rid of the glass, forming a separate tissue of collodion, or paper, and pigmented gelatine, to print upon, and then in a method of mounting this on a fresh support for the purpose of development. 2. It is not illegal to sell carbon prints produced by Fargier's process; but we fear that you will find printing on glass and manipulating the thin floating film impracticable. These were the difficulties which prevented Fargier's process coming into general use many years ago, when it was first announced. The illegality consists in making and using a separate tissue as described in the specification.

CEMENT.—The best material for cementing glass for the purpose of making baths is marine glue. We believe you may obtain it of most photographic dealers, and at some oil shops. You will not find gutta-percha adhere to glass if used in the way you propose.

B. P. L.—Carefully produced silver prints may have a long term of duration; how long it is quite impossible to say. If produced with great care, especially in the matter of fixation and washing, and if further kept very carefully preserved from damp or atmospheric influences, it is probable that the duration may be prolonged to an indefinite period. A silver image, however, is at best not the most trustworthy form of picture, if not carefully kept, as it is easily acted upon by the various agencies common in the atmosphere. We believe that plain paper photographs are more permanent than those on albuminized paper. As to how long the silver process will continue in existence it is impossible to say. Probably a very long time indeed for many purposes. A carbon print, if properly produced, ought to be permanent as any paper document. The amount of charged gelatine forming part of it does not exceed that on and in a sheet of highly sized writing paper, which is not a very perishable substance.

B. L.—Our own choice would fall on No. 1, as we know it to be excellent.

C. R. LOBB.—There is, doubtless, a great deal of truth in your statements, but this is not the time to urge them. It is an old, old story. Capacity and prudence generally succeed. Imprudence, and lack of tact, capacity, energy, or business habits bring failure; and failure is misfortune; and when this misfortune is complicated by unavoidable visitation of any kind, the case becomes sad, and one for sympathy and help, not for prudent maxims or reproach.

W. PARKER.—A design of frame can be registered, but the design only, not the general idea. Is it a design which you wish to protect?

J. GIRAULT (Cannes).—The transparencies of Mons. Ferrier are produced, we believe, on albumen. The working of the dry albumen process is not difficult to experts, but it requires much care and experience to manage satisfactorily. Very fine blacks can be obtained on collodio-chloride of silver, especially with the aid of ammonia fuming; but although these are equal or superior by transmitted light to those of M. Ferrier, they are scarcely so vigorous by transmitted light. Carbon printing may, we think, be made to yield prints in all respects equal to those of M. Ferrier. We have seen some produced by the Woodbury process which were even finer than those of Ferrier. Mr. Breese's transparencies are produced in the camera upon wet collodion. They are, you will observe, in many instances, even superior in delicacy to those of Mons. Ferrier, but not quite so vigorous. To secure effects of light, atmosphere, &c., like those of Mr. Breese, will require much care and experience, and will involve many trials and failures, with few successes. Especial care in selecting the suitable seasons and occasions will be necessary, and, for sunset, summer or spring evenings are more suitable than winter. Most of Mr. Breese's transparencies are printed from more than one negative; the exact method of manipulating Mr. Breese has kept secret. The strength of the developer should be suited to the scene and the amount of light; a forty-grain solution with twenty minims of acetic acid will often be found useful. Your lenses and stops will answer well. Thanks for your kind offer: we shall have pleasure in receiving the notes you kindly propose to make.

DR. LIESEGANG.—Received. Thanks. In our next.

WM. BLAIR.—Thanks.

Several Letters and Articles are compelled to stand over for lack of space.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

	PAGE
Negatives on Ground Glass	121
Mr. Johnson's Recent Demonstration of Carbon Printing	122
Photographic Notes on New and Old Processes. By P. Liesegang, A.M., Ph. D.	122
American Correspondence	123
Latest Improvements in the Carbon Process. By J. R. Johnson	124
A Theory of Photographic Development. By W. J. Stillman	125
On the Difficulties Attendant on Photography in India Applied to England, and How to Overcome Them. By Wm. Harding Warner	127
Prints and their Production. By S. T. Davenport	128
Correspondence.—Photographs and Flattery—Manchester Exhibition—Gallic Acid in Collodion—"Tunicare"—Art Studies not Indecent Photographs—Photo-Mechanical Printing—Keeping Prints White during Long Exposures	129
Proceedings of Societies.—Manchester Photographic Society—South London Photographic Society	130
Talk in the Studio	131
To Correspondents	132

NEGATIVES ON GROUND GLASS.

We called the attention of our readers, some weeks ago, to the description, in the letter of our American correspondent, of a style of portraiture which was exciting some attention in the United States, under the name of the "Berlin Process." Mr. Wilson described the prints as having a somewhat stippled appearance, resembling, in some degree, those produced from retouched negatives, and stated that the result in question was produced by having the back of the negative roughed or ground. We have now some of the examples before us, and we have, since receiving them, made some experiments in producing similar results, which we propose briefly to describe to our readers.

The examples received are various in character, some of them being very pleasing, and apparently somewhat improved by the treatment, whilst others are decidedly injured by the manifest grain which characterizes them. In so far as this very fine granular or stippled appearance is concerned, the prints have some resemblance to the very fine large female heads produced in Germany by Milster, Lœscher and Petsch, Luckhardt, and others, and published in this country. But they are not equal to these prints in delicacy, force, refinement, and modelling; in short, in those qualities which are due to very artistic working on the negative, which is generally sufficient to increase relief and secure refinement and harmony, without destroying the truth of nature, and producing a result rather like a photograph of marble than of a living model. The effect in the prints before us is novel, however, and will probably please some and interest many; we will proceed, therefore, briefly to describe our own experiments.

As it would have been somewhat difficult to rough the back of negatives in existence, we adopted the obvious means of supplying its place by placing a piece of ground glass with the rough side in contact with the back of the negative, and so printing through it. A slight degree of granulation was imparted to the print, less in degree and softer in kind than the American prints with which our esteemed *collaborateur* has furnished us. Mr. Wilson, in his letter on another page, expresses some uncertainty as to the precise plan adopted, and unless the glass employed for the American negatives is very thin, and the grain produced by grinding somewhat pronounced, we should scarcely fancy that the mere roughing of the back of the negatives would be sufficient to produce the effect we see. We then proceeded to repeat some old experiments of our own, interposing a granulated or stippled film between the negative and the sensitive paper. We first employed a thin screen of gelatine with an aquatint grain printed on it, prepared expressly for experiments in producing photo-lithographs with a grain. The prints produced by this method are, however, granular in the extreme; the grain, although very fine, is uniform in its character, and gives a grey, fuzzy look to the whole picture, destroying alike definition, force, and brilliancy, and there is no advantage of any kind gained.

The next experiment was more successful. We took an extremely thin sheet of mica, and by means of the mixture of zinc-white and mastic varnish, described by Mr. B. J. Edwards in our Year-Book, for obscuring glass, we produced a delicate stipple on the surface, closely resembling fine ground glass. We interposed this between a piece of sensitive paper and the negative in printing. With some negatives, the effect was so slight as to be scarcely appreciable, and the picture seemed neither better nor worse, in any noticeable degree, for the treatment; with other pictures, however, a specific advantage was gained. The subjects best suited are large heads, in which the greater part of the face is in half-shadow. In these pictures the slightest amount of over-printing is apt to produce a somewhat dirty effect in the face, the shadows are opaque, and the head loses at once delicacy and modelling. The thin stippled veil here becomes of service. It is so slight that in the blacks it soon becomes ignored, and is lost, as in deep printing very weak detail in shadow is lost, so that in the darkened parts of the head, such as the eyes, the deep shadows of the hair, &c., its effect is not perceptible at all. In the lights, which only very slightly print through at all, it is from the same cause, its delicate thinness, without noticeable effect; but in the half-shadows of the face, which print through just sufficiently to show grain or texture, but do not get sufficiently deeply printed to become buried and ignored, the effect is very apparent. The half-shadow becomes more transparent, the minute stipple of lighter points admits light into it, and becomes tender and delicate without losing force or modelling. In such cases, if properly managed, this thin stippled screen becomes, we think, decidedly useful. It permits the picture to be printed deeply and vigorously without risk of producing blackness and opacity in the delicate half-shadows of a face, the greater portion of which is in mezzotint, and gives a peculiar effect of light and transparency not readily otherwise attainable.

As a rule, we may remark, we do not admire what are termed "dodges" of this character, and only regard their use as a substitute for the skill and care which should produce a first-class negative not needing illegitimate aid to produce good prints. The methods to which we have referred have sufficient novelty to be interesting and useful in some cases, and, in reference to the special class of pictures we have named, to be occasionally of real value.

MR. JOHNSON'S RECENT DEMONSTRATION OF CARBON PRINTING.

Mr. Johnson's recent practical exposition of the various manipulations in the improved carbon process at the South London meeting presented several novel, as well as interesting, features, and illustrated the gradual progress towards perfection which can only be attained by constant practice in any new art.

One new fact—or, rather, confirmation of an old fact—was strikingly illustrated. The complete success of the demonstration was partially marred by the fact that all the prints Mr. Johnson developed in the presence of the audience were somewhat over-exposed, developing tardily, and appearing somewhat dark. The explanation of this was speedily forthcoming: Mr. Johnson learnt, on enquiry of his assistant, that the prints had all been exposed in the early part of the day, at least seven hours before the meeting, and had received the proper exposure for immediate development. Now the fact has been satisfactorily ascertained that the action set up by light on the sensitive surface is continued in some degree after the pressure-frame has been withdrawn from the light; and that if the development is not intended to take place at once, a somewhat shorter exposure than usual should be given. This precaution having been neglected, the prints which had been exposed seven hours before were found to be somewhat over-done. The same fact has been observed, but in a much less marked degree, in silver printing. A half-exposed print left in the pressure-frame over-night has been found to have made appreciable progress in the dark, suggesting that the action set up by light continued in some degree after withdrawal from the light. The fact is interesting, and its probable explanation may be found in Mr. Stillman's recent paper on the theory of development.

We have before described the manipulations in Mr. Johnson's improved process; but a brief *resumé* of the operations at the South London meeting may not be uninteresting. The first noticeable fact is the mode of sensitizing the paper; the old method of immersion, whereby an excessive amount of water was absorbed, which made drying a very slow operation, is quite abandoned, and floating employed instead. As the carbon tissue, or pigmented paper, as Mr. Johnson prefers to call it, is less pliant than albuminized paper, it is not easy to lay down a sheet on the solution in the same manner: a very simple and easy method is therefore adopted in its stead. A margin, one-third of an inch broad, of the pigmented surface is bent back; the sheet is then rolled up, pigmented side out, and bent-up margin also outward; the turned-up edge is then put into contact with the surface of the solution, and the sheet, being suffered to unroll, pushes itself along the surface of the solution, in which it comes into even contact without air-bubbles or wetting the back. A lath or rod of wood is then laid across the dish, and the bent-up edge of the paper pinned to it, so that when the sensitizing is complete it is lifted away on the rod, one end of which is placed in a slot made for it, and the sheet is left to dry.

The actinometer now employed is a very simple one. It consists simply of a small japanned tin box with a piece of glass in the lid. This glass is painted a lavender tint, and has an aperture in the middle. Inside the box is a roll of sensitive paper (Carrier's is used by preference, because of its keeping qualities). This paper is pressed into contact with the aperture in the painted glass in the lid, and exposed to the light. When it darkens to the colour of the surrounding lavender painted on the glass, it is said to have acquired one tint. Some negatives are sufficiently exposed with the sensitive pigmented paper when the actinometer acquires one tint, others require two tints, or more, and are classified accordingly. Fresh portions of the sensitive paper can be pulled into the aperture of exposure as may be required.

As Mr. Johnson explained, the exposed pigmented paper, after absorbing just sufficient of the water in which it is immersed for a few moments, will adhere perfectly to any smooth surface, whether of glass, metal, or similar impervious material, by atmospheric pressure only; but as this contact is required to be temporary merely to secure a support during development, it is desirable to prevent permanent attachment, and the plate, whether of glass or zinc, receives a coating of a solution consisting of three drachms each of wax and resin in a pint of turpentine. This preparation does not prevent the temporary sticking, but permits the transfer afterwards. An important aid to perfect temporary adhesion is leaving a safe edge to the pigmented paper, which is protected from light during exposure, and consists, therefore, of unaltered pigmented gelatine, which adheres readily. The use of the squeegee, for the purpose of pressing down the paper to the plate, driving out water and air, is an admirable aid to manipulation in this process, and permits certainty and rapidity in securing adhesion.

Mr. Johnson called attention to the character of the transfer paper now employed. It possesses a coating of insoluble gelatine, which, after treatment with hot water, assumes the character of slightly softened parchment or vellum, the gelatine swelling, but not dissolving, even in hot water. The adhesion to the developed print is, however, perfect, and, when dry, the whole leaves the plate without difficulty, as the members had opportunity of testing for themselves. Nothing could be more simple, certain, and elegant than the whole of the manipulations in this last and most improved phase of carbon printing.

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PHOTOGRAPHIC NOTES ON NEW AND OLD PROCESSES.

BY P. LIESEGANG, A.M., PH.D.

Light Reflected from the Back of Plates—Sensitiveness of Opaque Films—Fuming Washed Excited Paper—Negatives Developed in Camera—Green Glass for Dark Rooms—Salomon Pictures.

A most effective proof of the necessity of backing sensitive plates by a material of non-actinic colour may be obtained in the following way:—Coat a mica plate with collodio-chloride of silver, and expose to light under a negative, taking care to back it with printed paper. This paper will make its impression *from the back* of the plate, the black characters being represented by transparent ones in the print. (I enclose such a print.) This shows us that reflections from the back of the plate may lead to irregularities, especially if a *glass* plate is used; the greater thickness of the glass permits the rays of light to diverge from the back surface of the plate. But the experience shows more. It shows us that, in order to have the greatest sensitiveness obtainable by certain preparations, we ought to give them a *white* substratum. In the case of the ordinary collodion process, it will be necessary to work upon *flashed* opal glass, or upon mica plates backed by white paint or paper. The negative may be printed through the opal glass, or removed by any of the known processes. I prefer the first.

We know that the collodion becomes more sensitive by adding more iodide. Is it because there is then more iodide of silver in the plate, or because the film is more opaque to the actinic rays?

Wet plates are quicker than dry plates; perhaps, because they are *more opaque*. Then the opal plate might be of the utmost value for any dry process. These reflections come just under my pen, and I give them for what they are worth.

"*Nil novi sub sole*" is one of the old adages that remains always true. Most of the new photographic inventions are old things. Fuming the sensitive papers with ammonia—a process now much in use here for washed sensitive papers—is an old invention. Although most people believe it to be an American process, it was first published in Germany, as early as 1854, by one of our best amateurs, Mr. R. Le Grice, of Aix-la-Chapelle.

The washed paper gives much satisfaction to many of our photographers. The silvered paper is washed in water, and dried; it keeps for any length of time. Before using it, fume it with ammonia for from fifteen to twenty minutes. It seems that one of the permanent papers, which sold under the name of *carbonate of silver paper*, is prepared in the same way.

Old processes, described by new words, are to found everywhere; so I was not at all astonished to see Mr. Grune speak about obtaining developed negatives in the camera, &c., &c., a process described by me in 1861; nor that Mr. Carey Lea prefers green glass to yellow glass for the dark room. This has been suggested by me eight years ago, and the late Mr. H. Petschler, of Manchester, reported at that time on my *green* dark room in an English journal. I prefer the green light, because it shows the developed negative in its real intensity; whereas in yellow or orange light the negative always appears to be more intense than in daylight, and much practice of the eye is required to judge whether it is sufficiently intensified.

I do not see any mention made of the *Rhenish Salomon process* in the English journals. This process may be an imitation only of the happy results of Adam-Salomon. I had no occasion to compare the results side by side, but I may say that the photographic business has got a new impetus by this process. I know that many English photographers have imitated M. Salomon's manner; but I can judge best from those portraits exhibited in Paris last year. I have known M. Salomon's photographs (through M. Laulerie) for eight years; and I had the honour to be introduced to him by my friend Lacan about the same time. Although I have admired his works, I must say that I esteem him the more I see imitations of his work. M. Adam-Salomon has created a new style; nay, more, he has done a great deal for artistic photography; and very much is due to Mr. Wharton Simpson for having directed, in 1867, the interest of us all to M. Salomon's splendid productions.

The process has been introduced here by one of my old pupils, who has been an operator with M. Adam-Salomon. He says that the whole secret lies in the printing. I cannot say anything about this, only I know that his success in imitating M. Salomon is a grand one. The process has been sold here for £15, and has found its way into the press. It is described thus:—

Take a very deep impression from the negative upon albuminized paper; the lights must appear bluish, and the shadows must be metallic. This print is covered with a plate of ground glass, on which the face and hands are stopped out in black colour; then it is exposed to the light till all the high lights have a grey tone over them; then the margins of the print are toned down in the light, so that the figure is surrounded by a light halo; after this is done the print is washed for one or two minutes only, and thrown into the following bath:—

Water	6	ounces
Nitrate of copper	2	grains
Acetate of soda	72	,,
Carbonate of lime	1½	,,
Chloride of gold	1	grain.

In this bath the print remains for a minute and a-half only. It is fixed in a fresh solution of one ounce hyposulphite of soda in sixteen ounces of water.

I have just received a Salomon-portrait made in this way by M. Constant, of Lausanne, which is excellent in all respects.

Elberfeld, March 7th, 1870.

AMERICAN CORRESPONDENCE.

Sarony's Photo-Crayons—Side-Light *v.* Front-Light—Ferrotypes—Hints.

Sarony's Photo-Crayons.—Mr. Sarony's two nephews, Messrs. T. H. N. and N. A. P. Lambert, have recently arrived in this country to teach our photographers how to make the Sarony photo-crayons. I have seen them produce a number of them, and it is remarkable with what ease, and by what simple means, they can be made, and how quickly, too. They are very effective, and, as the Messrs. Lambert wisely propose to teach personally only the best of our profession here, there are hopes of the picture becoming very popular. A great charm about it is, that old negatives may be made to produce a revenue which nothing else under the sun or *by* the sun could do. No doubt your branch of the fraternity are reaping a rich harvest from Mr. Sarony's ingenuity.

Side-light v. Front-light.—I am glad to see you correcting the error which the communication by "Ennel" in your pages is sure to cause. If one would think for a moment, he would conceive how very incorrect, practically, is "Ennel's" theory. Before any inexperienced photographer builds a studio after such instructions, pray let him seat a few models in a predominant front-light, and he will shudder to think of the escape he has had, and the escape his patrons have had. Flatness and insipidity would have characterized his work, and the perplexities met in working such a light would add nothing to his stock of amiability. With us, the favourite plan for a studio is one with a top-light, if possible inclining to the north, and an east or west (or east and west) side-light. In New England the cone light is much used; *i. e.*, a cone-shaped top-light, and a side-light. The latter plan permits one to move the background about the room to accommodate the hour of the day, but it also compels him to do so; while in the former plan the models may be placed nearly in the same place all day long. Too much care cannot be taken, in erecting a studio, to avoid the adoption of error.

Ferrotypes.—Are ferrotypes so common in England as they are here? With us they are made by the million, tons of iron from Old England being consumed monthly in their production. Their popularity is owing to their cheapness, and to the fact that they are finished quickly after the sitting, and there is no further call to be made for the pictures, nor any contingencies on account of the weather. When well made, some of them are very pretty, and possess some artistic merit. The Ferrotypers' Association of this city recently offered a prize for the best example of work, and it really brought out some beautiful examples. Mr. Lothrop was the successful competitor, and as his formula is equally good for glass positives, I annex it; viz.:—

Collodion.

Ether and alcohol	equal quantities	
Iodide of ammonium	5	grains
Iodide of cadmium	1½	,,
Bromide of cadmium	1½	,,
Anthony's negative gun-cotton, to the ounce...	4½	,,

Nitrate of Silver Bath.

Strength ... ... 40 grains.

Developer.

Water	120	ounces
Protosulphate of iron	8	,,
Acetic acid	8	,,
Alcohol	6	,,
Nitre	100	grains.

Hints.—The following hints have been suggested to me recently, and may be useful:—A quick way of "cutting" albumen for coating plates and other uses in photography is to put it in a bottle with some pounded glass and shake vigorously (it is said to answer quite as well as beating), and then allowing it to subside before use. Another hint is to have a yellow glass funnel fitted to the bottom of the developing tent, and to it a rubber tube to lead the waste water to the ground, instead of allowing the water to run out splashing over one's feet as many do.

Very truly yours, Edward L. Wilson.

Philadelphia, February 15th, 1870.

LATEST IMPROVEMENTS IN THE CARBON PROCESS.

BY J. R. JOHNSON.*

The process which I am about to describe and exhibit practically before you this evening is the result of two years' work of head and hand in the attempt to produce a simple and easy method of printing in permanent pigments. Whether that object has been attained I will leave to your judgment after having seen the results produced before you.

We call this method the Autotype Process, and a print produced by it an Autotype, a term which I suggested about three years ago after consultation with several friends. The term was proposed, and has been very generally accepted, as appropriate to signify the reproduction of an artist's work in monochrome without the intervention of another hand or eye, the means used being simply the natural forces of light or actinism and chemical affinity; and the material employed being any of the permanent pigments of the artist's palette. It has further been extended to mean generally the production of a photographic picture in any of the permanent pigments used by artists in oil or water-colour, crayon or pencil.

Rationale of the Process.—The *rationale* of the process will be best understood by a short narrative of the various attempts to produce carbon pigment pictures by various inventors.

We must premise that the basis of all the processes to which we shall have to refer is the peculiar action which light has upon the bichromates, and particularly upon the bichromates of potass and ammonia, when they are exposed to the actinic rays of light in contact with organic matter.

Mungo Ponton first observed this action, by exposing paper immersed in a solution of bichromate of potass.

Becquerel showed that sized paper acted much more rapidly than unsized; hence the association of gelatine or gum, or their analogues, with the bichromates in such experiments.

Poitevin used the bichromate mixed with albumen or gelatine, to fix a pigment upon paper, and thus for the first time produced pictures photographically in such pigment. The paper, coated with a very thin layer of a mixture of albumen, bichromate, and pigment, was exposed to light under a negative. The albumen became insoluble where the light impinged upon it; while that unacted upon, retaining its original solubility, was washed and "sponged" away from the surface of the paper, leaving the pigment fixed, or entangled in the insoluble albumen to constitute the picture. Pictures in line or stipple may be thus produced, but not pictures in gradation or half tone.

Sutton saw the value of the new principle laid down, but not worked out, in Poitevin's patent, and made several suggestions for its application.

Pouncy repeated these experiments after the date of Poitevin's patent, using gum arabic instead of albumen, and a porous paper, into which he brushed the soluble pigmented compound, producing thereby the first carbon prints in half tone. Mr. Pouncy commenced a patent, but failed to complete it, and thus abandoned his process to the public. It cannot, however, be said to have formed a link in the chain of inventions by which success has been achieved.

It was the Abbé de Laborde in France, and Burnet and Blair in England, who explained the reason of Poitevin and Pouncy's imperfect results. They showed us that the sensitive compound became insoluble only on the surface exposed to the light, and that the parts partially acted upon, and constituting the half tones of the picture, rested upon a substratum of the compound, which was entirely unacted upon, and therefore soluble; and that to obtain these half tones, the soluble substratum should be removed, by attacking it from the opposite side. To effect this, they spread the sensitive compound upon glass, or paper made transparent, and printed the picture through the transparent material. After exposure, they washed away the soluble compound unacted upon, leaving the picture formed of the compound, rendered insoluble, attached to or *supported* by the glass or paper. The importance of the reasoning and of the experiments to which it led cannot be exaggerated, and to these gentlemen, and particularly to the persistent efforts of the latter, we owe much of our success in pigment printing.

Fargier spread the gelatine pigment compound upon glass or other plane surface, exposed the sensitive surface itself directly under a negative, covered that surface with a layer of collodion, and then immersed the plate in warm water. On the soluble gelatine being removed by washing, the collodion film floated and acted as a *support* to the insoluble film attached to it. The picture had then to be caught by inserting a piece of paper under it. He also made a paper to be printed upon from behind and through its substance, which must therefore have been of great tenuity and delicacy of texture. To produce correct pictures by this process the negatives must be inverted.

Swan greatly improved upon Fargier. He spread the sensitive compound upon glass, and then coated it with collodion, separating the compound film, which he called a "tissue." This he exposed under a negative, and, after exposure, mounted upon its support *before* development, thus avoiding the practical difficulties of Fargier.

He showed that the support might be either *permanent* or *temporary*. In the former case, the exposed tissue was at once fixed to the paper, card, or other surface upon which it had to remain, by means of albumen rendered insoluble by alcohol or by heat, so as to be unaffected by the subsequent washings. In the latter case, the exposed tissue was mounted, by being coated with a solution of india-rubber, and attached, by heavy pressure, to a piece of paper coated with the same substance. In both cases the mounted tissue was *developed* by being washed in warm water, to remove the soluble gelatine unacted upon by light, and subsequently in cold water, to remove the last traces of the chrome salts remaining.

The pictures produced on the *permanent* support required no further treatment; but such pictures, if produced from ordinary negatives, are, unfortunately, reversed, and this, of course, is an immense drawback to the usefulness of the process. Mr. Swan paid, therefore, but little attention to this part of his process, directing his labour exclusively to the second form of it, that in which the tissue is mounted upon a *temporary* support. He corrected the inverted picture upon such support by subsequent or second transfer to a paper coated with gelatine and then treated with alum, removing the india-rubber paper which had served as such temporary support by moistening it with benzine.

Mr. Swan made an important modification in the preparation of his sensitive tissue, and in the six months allowed him by law for completing his invention, and for describing the means by which he carried it into practice, he found that if the pigmented layer was also "supported" by paper before development, greater facilities of manipulation were insured, and that in this case the intermediate support of collodion could be dispensed with. He further modified the composition of the sensitive compound by the introduction of sugar in definite quantities, and also defined the thickness of the layer of pigment compound to be spread upon the paper, &c.

Since Mr. Swan's process has been worked so admirably and successfully by M. Braun, of Dornach, whose reproductions of original drawings of the old masters are so well known, many attempts have been made to simplify and improve the process of Swan. Processes have been published by Messrs. Jeanrenaud, Despaquis, and Edwards; but these are all either identical with or are mere modifications of Swan's single transfer process, in which albumen coagulated by heat or alcohol is the cement used to fix the picture to its permanent support; Jeanrenaud using literally albumen and spirit; Despaquis milk (that is, caseine); and Edwards gelatine rendered partially insoluble by alum, the use of which for fixing carbon prints to their final support in the second transfer had been already published by Swan in the Year-Book of Photography for 1867.

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* Read before the South London Photographic Society.

All these processes, however, require for their practice the use of inverted negatives, and cannot be applied to those existing, unless these be lifted from their glass support and transferred to another, a process which few will attempt with a negative of any value.

General Principles of the New Autotype Process.—Having described the state of our knowledge of the carbon process at the end of the year 1868, we will now set forth in general terms the new principles, of which I will show you the application ere long. I have found that in order to fix a pigment print upon its permanent or temporary support no cement is necessary, provided that support be impervious to air and water; that if, instead of substituting one cement for another, we discard all cements, and simply lay the wetted tissue upon the support, removing the air and excess of water from between the surfaces, the insoluble surface adheres to the support exactly as the boy's leather lifter or sucker adheres to the stone to which he has applied it. All that we have to do to complete the picture is to wash it in warm water; and, after the soluble gelatine is removed, to immerse it in cold water. If transparent glass has been used as the support, the picture is complete as a transparency, or as a picture to be viewed by reflected light when backed with paper. If the support be opaque (as opal glass, ivory, oiled canvas, india-rubber paper, &c.), the result is the same, but the picture is inverted if the ordinary negatives have been employed.

There is, however, no difficulty in correcting this inversion by a very easy process of transfer. If the glass or other support employed be coated with a fatty body infusible at the temperature of the water used for developing the print, but fusible at a somewhat higher point, the picture film may be readily detached from the temporary support on being mounted upon a piece of paper by any of the many colloid bodies which may be used for this purpose. The manipulations are of extreme simplicity; and nothing can be said to be wanting, to render the process perfect in every respect, but a pigment compound not materially affected by heat, and capable of being dried with ease and certainty. This great want, I am happy to say, has now been supplied. During the past year I have succeeded in producing and bringing to maturity a pigment paper of entirely new composition and properties, in reference to which it will be sufficient for present purposes to state:—

1. The new sensitized pigment paper, with proper appliances, will dry in less than one hour instead of requiring many hours.

2. The liability to change in the paper is diminished in proportion to the diminished time of drying, hence the removal of great uncertainty and difficulty.

3. Variation and change of properties in the sensitized pigment paper are removed, by the fact of its causing no change in the constitution of the sensitizing bath.

4. Much greater sensibility is secured.

5. Instead of a water-colour pigment, one ground in oil may be used; and, if desired, printers' ink itself.

The new Autotype process, with the advantage of these improvements, now consists, therefore, of the following operations:—

1. Sensitizing the new pigment paper, and hanging it to dry in a room heated to 80° or even 90° Fahrenheit for one hour.

2. Exposure of the sensitive paper under a negative.

3. Mounting the exposed pigment paper upon a waxed plate by means of cold water only, development, and drying.

4. Transfer of the developed print to its final resting-place by simply immersing the transfer paper in hot water, and applying it to the surface of the picture in the same manner as the pigment paper immersed in cold water was laid upon the plate. When dry, the picture spontaneously falls off the supporting plate firmly attached to the enamelled paper, leaving the plate clean for the operations to be repeated.

In addition to the advantage of extreme simplicity, the new process possesses that of great superiority in the results obtained. The use of a glass or metal plate has the effect of enabling us to produce at will a surface of any nature—polished, mat, grained, tooled, &c.—as the picture prepared upon it is, as it were, *cast* upon the plate, and retains upon its surface the impression given to it. The pure flat surface of the rigid plate imparts a quality to the print, never seen previously in pigment pictures.

Finally, the Autotype picture is *absolutely permanent*. Unlike the ordinary photographs produced in silver, which ultimately become yellow, and nearly disappear under the action of the sulphur compounds of our smoky atmosphere, in spite of the variable quantities of gold used in toning them, the Autotype is as durable as the permanent pigment employed in its production. If this be permanent, so is the print, for it owes its colour entirely to this inert pigment in its unchanged condition. We say inert, for it is the medium or vehicle employed with it which is the agent in the chemical changes involved, and *not* the pigment. The basis of this medium is gelatine, a substance universally recognised as a legitimate agent, and employed extensively, by the old masters, in distemper, or tempera-painting, although soluble in water, and therefore affected by damp and moisture. But the substance of the Autotype picture is not subject to this defect. It is not *soluble* gelatine, but gelatine combined with an earthy basis, and insoluble even in hot water, which is the vehicle, and which is also the substratum used for the transfer of the finished print. It has been called with great propriety transparent leather;* it is of the nature of vellum; and our ancient illuminated manuscripts prove, by the centuries which have elapsed since they left the artists' hands, that this is, of all organic bodies, one of the most stable and permanent.

A THEORY OF PHOTOGRAPHIC DEVELOPMENT.

BY W. J. STILLMAN.†

Of all the interesting processes by which chemical action manifests itself to the experimenter, not one, to my knowledge, possesses such a fascination, such a surprisingly delightful interest, from the chemical, mechanical, or even the moralistic point of view, as the process of photographic development. Although, at an interval of many years, I can still recall the thrill of delight with which I first saw the latent image become visible. I saw the fair white film, spotless and vacant, not a shade to suggest that there was a wonderful sun-work hidden there, and slowly, as the iron entered it, the truth there concealed stole out, and, little by little, feature, character, individuality appeared, the atoms took new order, obeyed laws unsuspected hitherto in their organization, and while I watched, the work was done. It seemed to me a beautiful type of the development of character in man, which, in its beginnings, unseen, is brought out in its truth by the great developer circumstance, and while we watch the boy, the iron of apparently hostile influences brings out his true character, feature by feature, and, as our best operators tell us, the more intensely and satisfactorily as it is conducted more slowly and persistently. And in nature's work, as in that of a good photographer, no redevelopment is necessary or even possible.

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* In an admirable letter by Dr. George Markham on this subject in the *British Journal of Photography*, February 25th, 1870, p. 84.

† Read before the Photographic Society of London.

Now, to understand the mere mechanical operation of photographic development is easy. As to what percentages of iron and acetic acid are necessary to produce the best results, is a matter on which, while there may be numerous opinions, there can be but one law, which is, that there must be such a relation between the developing and restraining elements that the process of reducing the metallic silver, which forms the dense parts of the film, must proceed by a regular process of crystallization. The action of development is by forming from a film of uncrystallized silver, or silver held in suspension by a haloid element, a film of metallic silver, in perfectly crystalline form. To understand the *modus operandi* of this transformation is to understand the great fact of photography. How the light does its work is as great a mystery as if it were all done in a dark room. If we expose a film of nitrate of silver on paper to the action of light, we find it reduced thereby visibly to metallic silver, *i. e.*, the action of light is to disturb the previous arrangement of the silver particles, and disengage them from the element that held them in solution. If, however, we expose a film of iodide of silver to the same agent, we find no perceptible effect. Yet, by the application of certain reducing agents, we find that the action of the light was really the same, but latent. The iodine which held the silver in combination held it too strongly to release to the action of the light, or, in other words, would not be dispelled by that action, alone and unaided; and it is only when we add an element for which the iodine has a greater affinity than for the silver that the reduction of the latter goes on. Yet the iodide, before being attacked by the light, refuses to yield up its element, and resists perfectly the action of the most powerful reducing agent.

Now what is the difference between the two states of the sensitive salt of silver before and after the action of the light? In the answer to this question lies the true explanation of the process of photographic development.

I have hitherto spoken of light as the attacking or impressing agent, in accordance with the ordinary nomenclature, which makes of our art, painting by light, while the fact is, light has nothing to do with it, it being the chemical ray, so called, of the sun-beam, which does the work, *i. e.*, in the complex action of the undulating fluid which conveys to us the solar influences, it is the wave of chemical action which produces the photographic effect. This truth alone should be sufficient, it seems to me, to show the fallacy of all the attempts to produce photographs in natural colours. The colour, being a constituent of the light-system of waves, has nothing coincident with those of the chemical system any more than with those of the heat-system. Both the light and heat-systems of waves may have an accelerating influence on the chemical, but it does not appear to be sufficiently strong to control to any degree the chemical action, and it would seem that colour reproduction is absolutely foreign to that action. Mr. J. W. Swan has treated this question in the true light, it seems to me, in an article in the Year-Book for 1870, and it might be added to the considerations he has adduced, that it is by no means clear that the quality of colour apprehended by the optic nerve exists in the object except as a peculiar modification of the chemical wave adapted to produce on the organ the effect of colour. If it were otherwise, would not the transmission or colour imply a transmission of a peculiar substance by the undulation of the chemical wave? A hypothesis hardly consistent with the known laws of chemical action. The phenomena produced by the action of coloured light on the violet subchloride of silver are pretty certainly, as Mr. Swan shows, only coincident iridiscence, and the results hitherto obtained are certainly not of a satisfactory kind.

But it will be said that the chemical effect of coloured light on the sensitive film is clearly so different with different colours that some influence must be attributed to colour. To this I would reply, that the light and chemical rays, being to a certain point coincident, are separated by a prismatic action alone, and that the beam reflected to the prism, or lens, from a coloured object can only contain as much of the chemical element as coincides in the prismatic arrangement with the given colour, and so, of course, a beam reflected from a green substance contains no more chemical effect than accompanies the green by the prismatic combination, and consequently has a low actinic power. The fact, too, that the actinic and chromatic elements are not really in any case prismatically coincident, the corrected coincidence being artificial, would seem to show that no real chromatic action can be expected, and that the problem of chromatic photography is one never to be solved.

To return to photographic action proper and practical, the determination of the difference between the sensitive film before and after the action of the sun-beam on it will give us the clue to the true theory of development. We must follow out the analogies of the wave-theory as proved by the investigations of the philosophers. We know that the actinic ray impinges on the film, producing a disturbance, through the agency of which the iodine is given a latent freedom. We perceive, moreover, that this action is transitory, and that when time is given between the action of the ray and that of the developer, the degree of impression produced by the former is materially diminished; and that in the case of the dry processes, the film finally regains its original unimpressed state.

This fact indicates a prolonged action of some kind, and that there is a certain relation between the undulation of the ray and the condition of the film. This can be only of two kinds—either the film possesses a sort of undulation in itself which is interfered with by the ray, or the ray communicates undulation to the film. In the latter case the undulation would gradually die away, and in the former, the disturbance would gradually subside, and in either case the film slowly regain its normal condition, as we find to be the case. If there were simply a mechanical disturbance of the atoms of the film, as in those of a layer of dust, there would be no reason for this return, as the mechanical effect produced would remain, as we see in all inert matter; and this reaction indicates a kind of constituted condition of the film, or rather of the particles of iodide contained in it.

Of the alternatives of a normal and uninterrupted vibration of the film, or a normal inertia disturbed by the action of the actinic wave, my own conclusions lead me to the former, and to believe that the sensitive film (and, perhaps, all constituted matter, as distinguished from organic) is in a perpetual condition of agitation analogous to the phenomenon known as phosphorescence; and, as in the experiments in acoustics, we see that two waves of sound may produce silence by an approximate coincidence of the wave, so, by an analogous action, I would suppose the actinic wave disturbing the normal agitation of the sensitive film and neutralizing it, producing a latent decomposition of the iodide.

The normal chemical condition being in this way disturbed, on the action of the reducing agent commencing the disintegration takes place, and the silver is thrown down in a crystalline form, the iodine escaping and forming a union with the iron or other developer.

Various phenomena which I have observed go to confirm this theory. If two prepared dry plates are placed film to film in close proximity, but not in contact, an accidental insensitive spot in one will be reproduced on the other. I have found a spot caused by a speck of some reducing substance in the film reproduced on the opposite film in absolute identity of form and location, though the second film had no speck to cause any insensitiveness. I have also found that particles of dust resting on the film of the Liverpool dry plate produce an insensitive spot, as if they had arrested the vibrations, and that these spots were reproduced on the film opposed to it with the greatest regularity.

Mr. Russell Manners Gordon informs me that he has also noticed that when a dry plate bearing a label on its back has been placed in the plate-box with the label opposed to the film of another plate, and in near proximity, the label is reproduced on the film opposed; and experiments which I have been prevented from carrying out by change of residence and suspension of labour, but which I hope to resume some day, incline me to believe in the possibility of the transference of the undeveloped impression on a dry film to another film placed in contact with it without the agency of light.

The phenomena actually observed, however, can only be accounted for by the theory I propose, for if the normal condition of the film is one of inertia, a speck in the film, or inert matter resting on it, would cause no agitation, and could not be reproduced, while the supposition of the normal vibration of the film would account entirely for this phenomenon.

I have, in the exposition of this theory, adhered to the use of the iodide of silver, because it is the sensitive salt which acts most strictly by development. The bromide is capable of being reduced to a certain extent by the action of the actinic ray alone, and the problem becomes thus more complicated. The greatest efficacy of the actinic rays which coincide with the blue and green colour in the spectrum shows that the normal wave of the bromide film is different from that in the iodide; but all the phenomena are essentially the same; and the participation of the actinic ray in the reduction perhaps explains why the bromide film in the dry processes is more sensitive, *i. e.*, more easily reduced, than the iodide, while the theory of the normal undulation in the film will explain why the preservative processes are, as a general rule, more sensitive than the purely dry, in that the former preserve a certain porosity of structure favourable to the undulation, the simple dry film being necessarily less favourable to that phenomenon from its compactness.

I offer the foregoing remarks, not as a demonstration, but as a contribution towards a theory of development which I hope the labours of others less occupied than myself may complete, either showing the truth of my theory, or its fallacy, by the facts being more clearly interpreted according to some other theory.

ON THE DIFFICULTIES ATTENDANT ON PHOTOGRAPHY IN INDIA APPLIED TO ENGLAND, AND HOW TO OVERCOME THEM.

BY WM. HARDING WARNER.*

And now let us pass on to the consideration of the *Chemicals* necessary to success in excessive temperature; and first, as to the bath. Its receptacle should be glass, and its dipper the same, or silver. It should be filtered every night, after work, and only one collodion should be used in it. It should not exceed twenty-five to thirty grains to the ounce, and when made the water should be warmed, and the silver dissolved in it. It should be iodized with potassium, a quarter grain to every five ounces of bath. This, after testing, may probably need a little acid; it should be just acid to give the best results. If we add *only* nitric we are apt to fall into difficulties, for nitric, being a hard dry acid, gives to the films of some collodions in hot weather a propensity to cause what are termed oyster-shell markings; if, however, acetic as well as nitric be added, the latter in greater proportion than the former, all will generally go well, and much trouble and anxiety be avoided in long exposures. The plate, after being taken out of the bath, should be backed up with red blotting-paper damped, of double thickness, for two good sound reasons: (1) to cause the film, if not a very creamy one, to retain every portion of the light reflected thereon; and (2) to prevent halation by double refraction.

Secondly, as to *Collodion*. Everyone of us has different ideas upon this chemical; some prefer one maker, som another. It is not my province in this to put forward any particular maker, as I have worked with nearly all th samples in the market; but I have a liking for one kind of collodion, which, in my idea, is the only one that will do for India, or for work where there is any excess of temperature. It is one made with pure ether and alcohol. With this your bath does not get contaminated; and if you pay proper attention to the amount of iodide and bromide it contains, according to the subjects you are engaged upon, you are almost sure of success. All that makers can do is to provide a good normal article, both as to collodion and iodizer; it is for the operator, looking ahead, as he does, as to what his work is likely to be, to mix those two in certain proportions, so as to ensure success. Those who send out collodions ready iodized, or who add indiscriminately the contents of the smaller bottle to the larger one, must not be surprised if they find it in some instances impossible to work at all, in others only partially so. The remedy for this is to add to every five ounces of collodion so iodized one ounce of plain, and the evil will in most cases be remedied.

I have a great partiality for age in collodion. I like it to be iodized, put away in the dark in a cold place, and kept for years. For landscapes and hot weather it ought to be at least two years old before using; and if it be over-iodized, or too dark, it may be readily brought round by the addition of a little plain of a newer make. Its advantages are great as compared with others: long exposures of two and three hours may be given without stains; better detail is rendered in foliage in very bright light; the plate is not so readily solarized; greater evenness of development takes place. There are other points which render it excellent, but time presses, and so I pass on to

Thirdly, *Development*. To enumerate all the varieties in use would be an endless task, one manipulator using one kind, another a different. Some like the gelatine with formic acid, some plain protosulphate of iron, some double sulphate of iron and ammonia, some saccharo-sulphate of iron, some sulphate of iron and pyro, and some sulphate of iron and sulphate of iron and ammonia mixed; but all have one end, the getting out of the image, and the one that performs its work the best, the easiest, the cleanest, and the quickest is generally the favourite. Now, any of these would do for us, say a fifteen-grain solution, supposing the temperature to be moderate; but in the extreme heat of an Indian climate there are some that will do better than others. The gelatine, I think, is preferred before any of the others, though if a little white sifted sugar be mixed with either of them in the hot days of summer, great benefit would be derived thereby. To know how to use your developer well is to know how to handle the paint brush, for with it you may make or mar all your previous work. To have a knowledge of colour, as to which reflects or absorbs the greater amount of rays in the subject you are about to take, is half the battle, and this is just the point where so many fail. Photographers, study colour; it will make you men of taste and feeling, and enable you to give expression in your pictures, where otherwise a dense black mass now, perchance, takes its place, destroying the beauty of the whole.

The chief aim that an artist ought to have in painting a picture is, to secure, if possible, a harmonious whole. This, in photography, is often difficult, and in the pages of the journals we constantly see various modes suggested in the shape of sky-shades and shutters, to gain the proposed end. Now, these are only so many helps to development. By a proper arrangement of chemicals, a good knowledge of colour, and the ordinary means as used with all lenses now—viz., a flap shutter—clouds, atmosphere, and distance, with a forcible foreground, and a graduated middle distance, may all be obtained without resorting to any special dodges. If clouds are there, they may be readily obtained, and to any one understanding the properties of his collodion and his lenses, such things as shadows may be put into a picture, even with two or three exposures; while halation, even with a large white window directly in front of your camera, may become a thing unknown. However, it is not my intention in this paper to state how this is to be done. I merely mention it in order to show that it does not require any special apparatus to command success—"*brains* only."

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* Continued from p. 117.

In developing in hot weather, whether here or in India, comfort in the tent is everything, and to sit down at your work is a great relief. Supposing that the exposure has already taken place in the middle of a hot sultry day, the better plan would be to dilute your developer down (say) one-half, stirring it up with a glass rod or a clean bit of stick. If clouds happen to be in the picture, a more dilute solution would be better; then, covering the plate at one swoop, gently move it about, and your image will gradually make its appearance. Now, without washing, put into the measure a little fresh developer, still dilute, and pour on to the plate; next put a few drops of silver, citric acid, and alcohol into the measure, tilt the iron on the plate back into the glass, and again pour over the plate; when intense enough, wash well; now fix, and again wash. The fixing, in most cases, to a certain extent slightly reduces the brilliancy of the image, if the same be not intensified before doing so. *Having done so*, your image, after fixing, is just in the same normal condition as it was previous to the intensification; thus, if you have faint indications of clouds, there they are without having been in the least destroyed. I always use cyanide. Now, again intensify; and, if the exposure has been of a very dark subject, first flow over the plate a little iodine solution, and your results will be all that can be wished.

In this I have stated nothing new. I have adopted the same plan for at least nine years, and it is always successful. It requires modifications according to difficulties of working, but the principle is the same in the main. Diluting the developer at the time is the grand secret, if any there be.

And now, supposing our plate to be dry, let us say a word on varnishing. In England, I think, all of us agree that a good shellac varnish is a *sine quâ non;* and so my friend thought, and has now on his shelves four or five pints of what we term the best in the market; but this is not the best there. He states that he picked up in the bazaar a half-empty bottle of some amber varnish, made by a well known maker; and that, on applying that, the mishap mentioned in the former part of my paper did not occur. Now I can only conjecture that the reason of the first giving is, that the lac being softer than the amber, and the solvent for the one being of a much higher quality than the other, the heat of the sun more readily attacks it, rendering it useless; coolness in temperature being, even in this, an item of importance.

My friend mentions having made a varnish of some gum produced from a tree grown in India. This gives a very hard surface, and will bear printing in the hottest sun; but water, cold or hot, instantly dissolves both it and the film from the glass. This tends to show that a certain amount of moisture is valuable as affecting the product before being made into varnish. If some of our members would turn their attention to this I should be much obliged.

Lastly, as to *Printing*. The same remarks here apply as in taking the negatives, and this is confirmed by the fact "that in the rainy season all my troubles disappear." Then make in your printing room (I have told him) an artificial rainy season by watering the floor, and all will go well. Also in printing, even in this country, it is not a bad plan either to cover the outside of the frame with white paper unglazed, or to place at the back of the negative a piece of tissue paper. Both secure clearer prints and better results. In the pages of both the photographic almanacs this year are many very useful suggestions on all the points mentioned herein. A toning and fixing formula by Mr. W. M. Ayres is excellent; the silver bath of Mr. W. T. Bovey is also good, if you desire to have clear whites in your prints during the dull weather; and last, but not least, are the very valuable and practical hints by my friend Lieut.-Col. Stuart Wortley.

PRINTS AND THEIR PRODUCTION.

BY S. T. DAVENPORT.*

Swan's Carbon Prints.—Mr. J. W. Swan, of Newcastle, simultaneously with Mr. Woodbury, was engaged in working out a method of printing in gelatine and carbon. Mr. Swan's investigations were, however, chiefly directed to the preparation of the gelatine film for the purpose of producing each impression in it by printing from the ordinary collodion negative by the action of light, dissolving out with warm water those portions which had remained unchanged after exposure of the gelatine under the negative image. The perfection to which Mr. Swan has carried his process is evidenced by the extensive series of works which have been produced, both in England and France, by its means. The French specimens are, many of them, *fac-similes*, in every conceivable colour and style, of drawings by celebrated masters, and are known and published in this country by the Autotype Company as autotype drawings. In carbon printing by Mr. Swan's process the film of gelatine and carbon is prepared of sufficient thickness and density to be practically opaque when placed upon white paper. The greatest depths of shadow in the picture result from the greatest thickness of the film remaining after the printing process has been performed; and so relatively with every succeeding gradation of tint, as the thinner the film remaining after the excess of gelatine and carbon has been dissolved out, the brighter will the lights appear, and the white paper will become more and more apparent till it approximates to pure white light. The pigment employed may be of any desired colour or tint, as is illustrated by the examples referred to. Prints of any desired dimensions are readily produced. The preparation of the gelatine and carbon film has been the subject of many interesting experiments; and Mr. J. R. Johnson, of the Autotype Company, has now rendered the manufacture so uniform, and its action so reliable, as to justify the expectation of its being shortly supplied to the public in sheets, for the general use of photographers, in place of the paper hitherto employed. Mr. Johnson has found that, in order to fix a pigment print upon its permanent or temporary support, it is only necessary that the support should be impervious to air or water.

Thus it will be seen that gelatine, since 1840, when Mr. Fox Talbot used it in combination with bichromate of potash as an etching ground, has played an important part in most of the recent processes which have had for their object the obtaining of permanent prints, but, in the cases enumerated, secondary processes have been employed. Both Mr. Swan and Mr. Woodbury substitute gelatine and carbon in combination for the paper used by Mr. Fox Talbot, and thus secure prints in a permanent material; but the prints so obtained have to be cut and attached to the paper mount on which they are issued to the public; and, simple as this process may appear, it was for a time a source of much difficulty and cost.

More recent investigations have led to a further development of the powers of this wonderful compound substance, and, at the present time, the tendency of investigation seems to point to the early rejection of all secondary processes, and the possibility of printing in carbon direct from the gelatine image itself; indeed, prints so produced are before the meeting.

Photo-lithography.—Many attempts have been made to obtain carbon prints by means of photographs transferred to the lithographic stone, and printed in ordinary printer's ink. Such attempts have not hitherto yielded thoroughly satisfactory results.

It must be borne in mind that a photograph is the result of the action of light upon the entire surface of whatever object is sought to be copied by its agency, and that the resulting picture is an ever-varying gradation from light to shadow. If, therefore, we attempt to transfer the image to the lithographic stone, we can only do so by giving the stone an affinity for greasy matter, whatever light has acted in the production of the photograph, which is over every part of its surface; and this is at once inimical to the production of a picture, as the stone, having an affinity for the oil of the ink, will not take it up in the same variable proportions in which light has acted in the decomposition of the silver salts. To overcome this difficulty, many methods of breaking up the masses of light and shadow have been resorted to, some by giving an artificial grain or surface to the stone, others by interposing an artificial surface between the photograph to be printed and the stone itself, thereby printing upon the stone only portions of the photographic image. The necessary results of such processes have been to destroy much of the natural drawing and character of the object represented, and, at the same time, to reduce the force of the shadow and middle tints, rendering the print grey and flat in effect.

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* Continued from p. 93

It must, at the same time, be admitted that much has been done by photography to aid the production with facility of photo-lithographs, rendering a comparatively small amount of hand-labour requisite to their finish, as will be seen by reference to the early examples of French photo-lithography, and the more recent productions by the Messrs. Bullock in this country.

Though photo-lithography has hitherto proved its inability to produce satisfactory artistic examples, it by no means follows that, in other directions, it has not been more successfully applied. Much has been done in Australia by Mr. J. W. Osborne, and in England by Sir Henry James, by means of photo-lithography and photo-zincography, and where flat objects have been copied, and the texture of fabrics sought to be rendered, the most perfect success has been attained, as will be seen by examining the photo-lithgraphs of Indian shawls and other fabrics, prepared by Mr. Griggs, in illustration of Dr. Forbes Watson's work on "The Fabrics of India."

Mr. Griggs has also applied photo-lithography successfully to the production of photo-chromo-lithographs. In the production of the example exhibited, eleven printings were involved, and the character of the fabric copied is most faithfully and minutely rendered. Photo-lithography and photo-zincography have also been, and are still, extensively used in the production of maps, plans, &c., and with highly satisfactory results; but it is of the artistic aspect of photography that we have now to speak.

(*To be continued.*)

Correspondence.

PHOTOGRAPHS AND FLATTERY.

Dear Sir,—Being much pleased with a paper on Flattery, by "Stellar Polaris," in your issue of March 4th, I could not withstand the temptation of a rambling remark or two thereon. If you think them worthy of space, good and well; if not, it is all the same; just commit to the "Balaam box."

I have heard it remarked by many photographers that it is not their best, or what they think their best, productions that please their patrons, and have seen it remarked, if I mistake not, in the Photographic News, that on submitting several specimens for approval, it is almost invariably the worst that is chosen, which shows clearly that the photographer and the public do not always look through the same spectacles. It is certainly very discouraging, after having managed, by dint of not a little care and trouble, not to say anxiety often, to make a good negative of a stiff and unmanageable sitter, to find, instead of a justly merited admiration of your work, that you have to swallow a dose of offensive ejaculations. "Stellar Polaris" says that the cause, to a good extent, of this disapprobation, is flattery; and with him I agree so far, especially amongst a weak-minded section of the fair sex. I have had, also, to combat another class of customers, who are not so liable to be flattered; viz., those who (before they have their portrait taken) have formed a preconceived idea of their personal appearance (which is not the evidence of a weak mind), and that if the artist fail to make a picture up to their idea, or notion of themselves, let it be never so good, it is condemned, without even being able to point out a fault in it. A mechanic knows by certain rules and principles how to construct a machine, but it is beyond the limits of an artist to apply the rule or compass: his fancy must sketch his design, and his eye be the instrument by which to measure it. Had it been otherwise, I may say, in passing, photography would have had no claim to be styled an art. We see that the photographer has done his work with all his ability and pains, and yet it fails to please often.

How, then, is the difficulty to be overcome? That is the main point. Grin and endure it, says "Stellar Polaris," or lose your customer. It is sometimes not a bad thing to lose a customer of the worst type of the never-satisfied kind. I knew one of this sort who returned to a respectable photographer with a dozen cartes-de-visite he had taken. His remedy was thus: After hearing coolly a thousand silly remarks anent them, he replied, "Well, these are about my best," at the same time tossing them into the fire, and showing him the open door. But this is rash, and will not do to be practised. To grin and endure it is better; but to do this is not always manly, although sometimes it is better to bow for advantage. The only real antidote for the bane, if I understand "Stellar Polaris" aright, is to flatter. If he means by flattery to make his subjects look better than they really are, then he is, in my mind, wrong; but if he means, by the aid of flattery, to make them look their best, then do I think him right. I do not know many who do not like a little flattery, it is inherent in the nature of almost every one; but it is a dangerous weapon to wield, and, in my opinion, not to be recommended to the photographer. Flattery is unwholesome; it is contrary to truth. The great aim of the painter is to seize nature in her grandest moods; to copy what he sees before him with the most due regard to truthfulness, for in its approach to nature depends the quality of the painting and the name and greatness of the artist. The same principle, I think, should guide the photographer: to get his subjects in their best moods, to get their best expressions, to put them in the best light possible, and, not least, to copy truthfully, without flattery; then do I think his work will recommend itself to any thoughtful man and woman, who care nothing for a portrait unless it is a telling likeness; likewise will he assist in raising the moral tone and standard of photography, a consummation devoutly to be wished.—Yours truly, A. W.

Princes Street, Dundee.

MANCHESTER EXHIBITION.

My Dear Sir,—As it is scarcely likely that any one to whom I may have given prints would be (to say the least of it) indiscreet enough to exhibit them in my name without being authorised to do so by me, might I request the insertion of this note in your next number, to say that I was not an exhibitor at the late Manchester Exhibition of photographs?

My reason for troubling you is, that I hear from a friend of mine at Manchester that several photographs appeared there with my name on them.

If the prints in question are good, it would be unfair to deprive their real producer, whoever he may be, of his merit; and if bad, I desire the responsibility of no one's failures but my own.

I hope in future no "hanging committee" of any photographic society will exhibit prints sent them as mine unless accompanied by a request to that effect from myself.—Believe me to be, yours faithfully, R. Manners Gordon.

GALLIC ACID IN COLLODION.

Sir,—Had Mr. Bovey read my paper more carefully, he would have seen that I did not condemn his process; I simply stated how I tried his plan, and failed to get any increased sensitiveness. I then said, "I mention these things to see if any other member has tried and been more successful," &c. Here end my remarks on Mr. Bovey's article, and what follows has no more to do with his process than if it had never been mentioned in my paper at all.

Mr. Bovey denies that he advocated in his article the use of gallic acid, and abused me rather severely for not perceiving this. Now, in the last part of his article, Photo News, Jan. 28, page 42, after showing that if we can find something to add to the collodion to make it work more rapidly, &c., he asks, "Where is the substance that can be thus applied? Where the proof that such application would perform the desired office?" He then answers himself, and shows how he discovered, by a large amount of *brain labour* (brain labour he might have spared himself, by referring to Hardwich), that gallic acid was the substance required. To prove this, he took (with collodion containing gallic acid) the portrait of a child in motion on a day when, to use his own words, "the sun shone feebly through a yellow curtain, which London photographers too often look upon and curse." Not advocate gallic acid, Mr. Bovey! If you found an agent to do this, I think you had cause to advocate it, and strongly, too.

He afterwards did say that gallic acid was not the only substance that might be applied, but that does not alter the fact that he *did* advocate the use of gallic acid; and, as I stated in my paper, he *did not* advocate any other substance.

Had Mr. Bovey answered my paper in a proper manner, and pointed out some probable reason why I failed, instead of accusing me of ignorance and incompetency, I think he would have better served the cause of which he is an advocate, and conferred a favour upon,—Yours truly, S. BEVERLEY.

Oldham, March 14th, 1870.

"TUNICARE."

DEAR SIR,—In your notice of "Tunicare," I see one drawback mentioned; that is, when the negatives have to be cleaned off, it is almost impossible to do so if "tunicare" has been used in the preparation of the plate. There is really no difficulty in removing the film if the plate is rubbed over with hydrochloric acid as recommended for the first cleaning, and then allowed to soak in water. After varnishing, the film can be removed by the same means, and prolonged soaking in water.

I think the difficulty mentioned really should be a great recommendation, as photographers are constantly losing valuable negatives through the cracking and splitting of films. I have tried in many ways to make the film crack on plates prepared with "tunicare." During the severe weather we have had, I have left negatives varnished out to be frozen for days, and, while still frozen, dried them at a brisk fire, but cannot get them to crack.

In "Echoes of the Month," I see a query whether "tunicare" is likely to injure the bath. I can assure you that it will not; on the contrary, the bath will keep in working order longer by its use; in fact, a disordered bath is a rarity. I believe more baths are injured by dirty plates and the ordinary modes of cleaning them than by any other means.—I am, dear sir, yours obediently, G. JONES.

Marlborough, March 15th, 1870.

ART STUDIES NOT INDECENT PHOTOGRAPHS.

SIR,—In your last issue I see a paragraph headed, "More Indecent Photographs," the vendor of which is described as Henry Evans, Castle Street, Long Acre. Now, the fact is, Evans was patronized almost entirely by artists and art students, and the photographs in question are simply studies from artist's models, and as much like the abominations of Holywell Street as chalk is like cheese. They would utterly fail to satisfy the cravings of the patrons of that notorious mart. Many of them are produced in the art academies of Paris, with a scale of inches alongside the figure, and are really splendid studies that would delight the heart of your friend Mr. Rejlander. I think this prosecution of Evans is a straining of the law to a matter it was never meant to reach, and I have no doubt the worthy magistrate who condemned these prints would be shocked at the indecent realistic drawings produced at the various life classes in London. Indeed, we had one of our legislators last session moving the House of Commons to put Lord Campbell's Act in force at the Royal Academy schools. That hon. gentleman measured the morals of artists by his own standard, I guess, and could not have descried a single beauty in "The two ways of life," or Titian's Venus, or any picture with a nude figure in it. It is a great hardship for art students to be debarred from purchasing at a cheap rate photographs that will aid them in their studies and help to economize their scanty means. The law can prevent me purchasing a photograph from the nude, but it cannot prevent me having a nude model in my bedroom, which is all the studio many of us have. Which is the most indecent, I wonder—to make use of a photograph, or be closeted with a model in such a room as I have described? Of course every artist who can afford it has the models in his own studio; but how many hundreds of students in London can hardly keep the wolf from the door, much less afford the unheard of luxury of a private model! I know one who once ventured upon that extravagance, but he said he could not work in comfort, as he was thinking all the time of the sum he would have to disburse at the end of the sitting. The interest I know you take in students in general must be my excuse for troubling you with a letter on this subject.—Yours respectfully,

AN ART STUDENT.

PHOTO-MECHANICAL PRINTING.

DEAR SIR,—Will you favour me with a little space in answer (which will be the last) to Mr. Robinson's remarks in last week's NEWS.

Mr. Robinson is quite welcome to the advice I gave; and I am glad to hear that he has so greatly altered his views (as set forth in his specification), in that he lays no claim to the parentage of negatives by hand-drawing. And yet Mr. R will, after all my *kind advice*, persist in being the *inventor* of something, and that something the deposit on his plate, &c.; for he states that the distinctive claims of his process are admitted by me in that I stated that I employed a *far superior* layer to that employed by him, and that this exception formed the distinctive claim of his process.

I can assure Mr. Robinson that my long experience—as justly stated by him in last week's NEWS—in mechanical printing (and, I may add, in photography in general this last sixteen years) has proved to me the superiority of the layer I now employ over the one I employed years ago.—Yours respectfully,

Bishopston, Bristol, March 14th, 1870. J. SCHMIDT.

KEEPING PRINTS WHITE DURING LONG EXPOSURES.

MY DEAR SIR,—After reading the article in the NEWS of the 25th ult., on "Preserving Prints from Discolouration During Long Exposure in the Printing Frame," by M. Grasshoff, I am induced to send you my own experience in the same direction.

Several years ago I had a very troublesome negative in hand, each print from which required from four to six days' exposure in the frame before the image was sufficiently printed. Of course, under ordinary conditions, the paper became yellow long before it was printed; but I found, by placing two or three pieces of sensitized albumen paper, that had been thoroughly blackened by exposure to light, between the felt pad and paper to be printed, that the purity of the whites was retained even after a week's exposure. I have since continued this plan in all cases requiring it, and most decidedly prefer it to any of the nostrums that have been recommended from time to time as additions to the silver bath for a like purpose, producing, as they do, troublesome complications that are best avoided.

But more recently I have improved on my original plan, by waterproofing the blackened paper, for which purpose the solution of alum and acetate of lead recommended in the NEWS for waterproofing tent covers answers capitally.

During the past year I had an opportunity of testing the usefulness of this waterproof paper, having some exceedingly dense wax-paper negatives to print, which were in the frames for twenty days, and yet, though not sufficiently printed, the purity of the whites were found perfect when the print was toned and fixed as usual.

A sheet of the black waterproof paper was placed on the back of the sensitive sheet, then a dry felt pad, next another sheet of black waterproof paper, and lastly the back-board.

If you think the above-mentioned plan of sufficient interest, you are welcome to make any use of it you may think fit.—I am, dear sir, yours truly, J. C. B.

March 2, 1870.

Proceedings of Societies.

MANCHESTER PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting was held at the Memorial Hall on Thursday evening, the 10th inst.

The Rev. Canon BEECHEY, M.A., President, who occupied the chair, said he wished to explain to the meeting why he had been absent from several meetings of the society, and gave good reasons for his absence. He regretted very much his inability to be present at the *soirée*.

The minutes were then read and passed.

The SECRETARY laid the first number of a new publication, "The Photographic Art Journal," on the table, and said it had been sent to him with a request that he would introduce it to the members.

A long discussion on lantern pictures, and the most convenient way of storing of oxygen gas, led to the passing of the following resolution:—"That Messrs. Coventry and Whaite be appointed a sub-committee to supply the meetings with the means of showing lantern pictures."

It was also resolved:—"That the thanks of this society be conveyed to the numerous gentlemen who so kindly and handsomely contributed to the *soiree* exhibition, and also to the committee who carried out the arrangements.

The meeting closed with the usual votes.

C. Adin, Hon. Sec.

South London Photographic Society.

The usual monthly meeting of this Society was held in the City of London College, Leadenhall Street, on the evening of Thursday, March 10th, the Rev. F. F. Statham, M.A., in the chair.

The minutes of a previous meeting having been read and confirmed.

Mr. J. R. Johnson proceeded to read a paper on the Carbon Process (see p. 124). At the conclusion of the paper he proceeded to demonstrate the process, mounting, developing, and transferring prints in the presence of the members (see p. 122).

After a vote of thanks and some conversation, it was resolved to postpone the discussion until the next meeting, when Mr. Johnson hoped to be present to answer questions or solve difficulties which may occur in the meantime to members who may try the process.

The Chairman announced that the May meeting would be devoted to the exhibition of pictures and conversation thereon, as in previous years.

The proceedings then terminated.

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Talk in the Studio.

Indian Photographic Exhibition.—We have pleasure in announcing that Mr. Netterville Briggs received the silver medal of the Bengal Photographic Society, for the best portraits of children, at their recent exhibition.

Combination Negatives.—We have repeatedly noticed with approbation the artistic examples of combination printing we have received from a "Northern Photographer." We have recently received from him some clever examples produced by one printing from combination negatives. There is no trace whatever of the junction, even in cases where the most delicate outlines are joined, in some cases three separate exposures being combined to form one negative. The subjects are chiefly figures in interiors, with a distant view through the window, after the manner of some of Mr. Hubbard's combined pictures. The photographer is Mr. Johnston, of Wick, who has described his method in a pamphlet, details regarding which will be found in our advertising columns. As Mr. Johnston is desirous of securing some remuneration for his labour in devising his mode of combining negatives, we refrain from publishing his method here. Those interested in the production of such pictures may obtain the necessary instruction in his pamphlet for a very small outlay.

Fire in a Studio.—A fire was discovered at four o'clock on Friday morning last in the premises of Mr. Faulkner, artist and photographer, Park Crescent, Torquay. The West of England fire-engine was soon on the spot, and, under the direction of Mr. Chillcott, rendered efficient aid, and succeeded in extinguishing the fire. There seems to be little doubt that the fire originated not from any chemical or photographic cause, but resulted from a gas stove in the studio, which latter, erected not long since, has been completely destroyed, together with a large number of negatives. Happily, the more valuable of Mr. Faulkner's stock of cameras and lenses were all packed up and removed to another part of the premises, he being about to proceed to London. The damage is estimated at several hundred pounds.

Quekett Microscopical Club.—The annual *conversazione* of this club was held at the University College, on Friday evening, and was attended by a very numerous assembly of members and visitors. Amongst the objects exhibited were an interesting collection of photographs lent by the India Office, the Autotype Company, Mr. Frank M. Good, and Mr. A. L. Henderson, which were much admired. The whole process of micro-photography was demonstrated at frequent intervals by the Messrs. Solomon, the actinic influence being derived from their new magnesium lamp.

Portraits of the Police for Thieves.—Photography has long ago, in criminal practice, taken the place of what used to be called, in the Queen's Bench, "sitting for your portrait;" and even Mr. Pickwick would now have requested the myrmidons of Mr. Roker to take to the camera rather than use their eyes. But the sun, like many other things, can cut two ways; and it is rather curious to find that English thieves in Paris, whose portraits are in the hands of the police, have had, in their own possession, portraits of the police. The cat may watch the mice, but the mice may, at the same time, watch the cat; and this is exactly the view which has been taken of the matter by the thieves who have been captured in the "gay city." It was proved that they were the perpetrators of various great robberies, and that one of them (a lady) had been in the habit of visiting many tradesmen under pretence of making purchases, and never failed to carry off various articles for which she had not paid. It was found, too, when they came to be examined, that they had concealed about them the likenesses of all the police agents in Paris, so that the game of hide-and-seek was as well distributed as if they had had a Fouché on their side as a set off against the Fouché on the other. Their case is, however, not so striking in this respect as in another, which was pointed out by the Government lawer who prosecuted them. He showed the court that owing to the very strict manner in which the light-fingered gentry are being dealt with in England, and particularly to the use of flogging—which, by the way, is unhappily not so much in vogue as he supposes—English thieves are driven over to France to seek a livelihood. It is unfair, of course, to wish that we should get rid of the plagues of society here by shifting them on to the shoulders of our neighbours abroad, but Rochefoucauld has said that it is human nature to rejoice at the misfortunes of one's friends. In that sense we may congratulate ourselves, and we are the more strengthened in doing so by the fact that the police on the other side of the Channel are considered the astutest in the world. So long as they can play at the game of "diamond cut diamond" as well as they have recently done, may they long have subjects, even of English extraction, for the exercise of their ability.—*Sportsman.*

Defaulting Sitters.—Talking of photographs, we recommend to the notice of gentlemen of the camera whose customers cannot be found, the example of one of their body at Kensington, who has posted on his window the following notice under a portrait: "Mr.—— requests this gentleman to call and pay for the photograph had last November, or forward his address without delay." This is the hue and cry with a vengeance. It is difficult for grocers, or tailors, or wine merchants to lay hold of those who take French leave of their accounts, but the photographer has always the law of reprisal in his own hands. He has only to display in his window the portrait of the victim who has made him a victim, and everyone is able to say, with Nathan, "Thou art the man!"—*Ibid.*

Wooden Dippers.—A correspondent of the *Philadelphia Photographer* says:—"In one of the numbers of this journal in 1866, it was proposed to use wooden dippers. I immediately fashioned one to my taste, made it very hot in an oven, and gave it a good bath of hot beeswax. The two I am using now have stood in the solution day and night for two years, and do not harm the silver bath the least."

Cyanide Sores.—The same correspondent says:—"The winter of 1867–68 I had cyanide sores on my hands for several weeks. My family physician failed to heal them. I then, on going to bed, wrapped my hands in muslin wet in rain-water, and kept them wet all night from a dish by my bed. After three nights' treatment in this way they were well."

Photographic Æsthetics.—Dr. Vogel is preparing a work on photographic æsthetics, to be profusely illustrated.

Astronomy and Photography.—We learn from our Philadelphia contemporary that Mr. Rutherfurd has lately photographed successfully the star group of the "Pleiades." He has measured them micrometrically, and found his measurements to correspond with those of the celebrated Berrel. Mr. Berrel was employed for eleven years in his measurements; Mr. Rutherfurd accomplished them in one night. So much for photography.

What does it Mean?—*Licht* says that under-exposed pictures can be improved by developing them to their full extent, then shaking and tossing them violently, and redeveloping.

Lantern Accident.—The *Philadelphia Photographer* says that while Mr. J. W. Black, of Boston, and his worthy assistant, Mr. J. L. Dunmore, were about to commence a lantern exhibition in Lowell, one of the gas-bags exploded with tremendous force, threw Mr. Dunmore high in the air and burned him sadly about the face and eyes, knocked Mr. Black senseless, drove a stick through the nose of the organist, and damaged the organ-loft, organ, and church considerably. Mr. Dunmore, at this writing, still lies suffering much and very low, but, with great care, it is hoped, may recover his sight. Mr. Black, though much hurt and quite deaf, faithfully applied restoratives to Mr. Dunmore the whole night of the accident, or the poor sufferer's sight would have been gone.

Rendering Tissues Waterproof.—M. Mounier gives the following in *Cosmos* :—One kilo. of alum is dissolved in thirty-two kilos. of water, and one kilo. of acetate of lead is dissolved in the same quantity (separately) of water. The two liquids having been mixed, there is, of course, precipitated sulphate of lead; as soon as this is deposited, the clear liquid is decanted, and the fabric which it is desired to render waterproof is thoroughly steeped in this fluid, and next dried by being hung up in open air.

To Correspondents.

R. H.—The yellow tint of the prints you send is due to sulphur. They have been fixed in an old or acid fixing bath. Use a fresh solution of hypo for each batch of prints, and your prints will not be yellow like those enclosed in your letter. 2. Add common salt or hydrochloric acid to your print washing waters, and throw down the silver as a chloride. 3. Add to your old toning baths proto-sulphate of iron, and wash the black precipitate in dilute sulphuric acid. The dark powder left will be pure gold, which, by means of nitro-hydrochloric acid, can be again converted into chloride of gold.

Williams.—The lens you have obtained will doubtless answer your purpose well, and the price was reasonable. 2. Permanganate of potash in solution will remain good a long time; but you must bear in mind that each time it is used a portion of it becomes decomposed. So long as it retains its bright tint, however, it will answer for intensifying. 3. You may continue to use it for rectifying baths without risk. You will often find opinions expressed condemning good agents and useful operations; you will gradually learn to discriminate, and form your own views. As a rule, when you find anything answer well, continue to use it until you are satisfied you have found something better. 4. You may pour the developer on the plate in any way you can best manage it, remembering that the chief object is to cover the plate with it as rapidly as possible, as any interruption or stoppage in the flow will cause a stain. 5. The last edition of Hardwich's Manual is the seventh, the last he himself edited was the sixth, published in 1861. It affords pleasure to find one in your position endeavouring to master a beautiful art. We shall have pleasure at all times in aiding you with advice or information.

R. Roberts (New Brunswick).—As a rule, the working details of the various photo-mechanical printing processes are kept secret by the inventors, each experimentalist having to work out his own method. You will find a general description of Mr. Fruwirth's process in our issue for August 14th, 1868; no detailed instructions have ever been issued. If you coat a plate of glass with a thick layer of bichromated gelatine, and expose under a dense negative of a subject in line, until the light has passed right through the film, and then wash away, the bottom surface being formed by the glass, you will have no difficulty with unequal height in the final printing surface. Mr. Dallas's process of photo-electric engraving is a secret process, which is still practised by the inventor. You will find varous hints and articles scattered through the pages of the News for years back, but there is no work where the information exists in a collected form.

Beta.—Dr. Liesegang's address is "Elberfeld, Prussia." We are not aware that he is in London, or likely to be shortly.

J. H.—The drapery and general pose of the portrait sent are pretty good. The only fault in the arrangement consists in the fact that the head is a little too much to the right. The rule in arranging the position of a head is to have a little more space in front of the face than behind, so as to avoid the effect of the figure being in the act of moving out of the picture. With this exception, the arrangement and general qualities are good. There is no fault with the drapery.

Newly Interested.—You need not have a better guide than Mr. Hughes's Manual. It is impossible to give you any satisfactory idea of the probable cost of a set of apparatus in this column. Write to a dealer, and ask for a marked catalogue of articles. The set may cost you from about £5 to £20, depending on quality, number of articles, &c. We shall always have pleasure in aiding you with hints and advice in difficulties.

W. Parker.—So far as we understand the matter, any variation of form whatever will make necessary a separate registration. The fee is very small, not exceeding half-a-crown, we believe. The protection continues for three years. But for detailed information to guide you safely in such a matter you will do well to apply to a patent agent, whose business it is to understand such matters perfectly, and manage them for inventors.

Questioner.—The lens in question with 7½ inches back focus will cover a 6 by 5 plate with its full aperture. With a moderate stop it will cover an 8½ by 6½ plate. Something will depend on the subject for the degree of perfection of covering, but with an ordinary subject, not possessing special difficulties, it covers well to the edges. 2. We cannot state the exact relative exposure required for the two sizes mentioned. 3. It would be quicker in its action when stopped down for an 8½ by 6½ plate than a No. I triple used for the same purpose; the exact relation we cannot state. 4. It is decidedly more rapid and much more useful in many ways than the triple, and we give it a very decided preference.

Lantern Queries.—W. Coombe requests us to submit the following queries to Mr. J. Martin :—"When using the lime light and photographic transparencies 3¼ by 3¼ size, what is the very best size of condenser and object glass to use in order to obtain a light and well defined picture 24 by 24 feet on the screen? I was present at an exhibition a few weeks ago, and the pictures were very large and light. It occurred to me that the object glass, if not the condenser, must have a large aperture. Second, what is the largest disc that can be fairly shown with the oxycalcium light? If it is so little trouble to use, it will be easy to make a bag of gas at home for use in the country, or it could be made on the spot, when giving an exhibition to a village school, or for any purpose of a similar nature when hydrogen is not readily obtainable." Mr. Martin replies as follows :—"In deciding the best sized condensers suitable for three-quarter inch square photographic transparencies, let your correspondent mark out with a rule and pencil on paper a square of the entire size; then place the point of the steel leg of a pair of compasses carrying a pencil in its centre, and open them sufficiently to enable him to strike a circle round the outside of the square. This will be found to be 4½ inches in diameter. Now all glass pictures are generally secured to their covering glasses by some sort of binding or frame, which so far diminishes their size; therefore, condensers of 4½ inches in diameter can be used for such pictures, but the lenses of which they are composed must be of first-rate quality and construction, otherwise they will require to be larger than those fitted to common lanterns, which never show pictures clearly and without distortion up to their margin. Thus Mr. W. Coombe will see that experiment will, in this case, be the best proof. To this second query, as to relative size of object glasses to condensers, this will depend upon the form of combination and its length of focus, or otherwise, as some guide. I may state that in a combination of first-rate quality in my possession, which will show 3¼ feet transparencies on the screen very highly magnified, the condensers are 4¾ inches in diameter, and the object glasses 2½ inches. I have exhibited pictures by the hydro-oxygen light with 4-inch condensers up to 16 feet diameter, but I cannot say that I was satisfied with either the clearness of the details, or the brilliancy of the lighting. I should, therefore, fear that transparencies of 3¼ inch square magnified to so great a size as 24 feet by 24 feet would not prove satisfactory even when lighted by the lime light. When pictures are required for public institutions, to be exhibited on a gigantic scale, they are themselves painted of a large size, and thrown by a suitable apparatus. Both of these, being very expensive and cumbersome, are not fitted for minor or private exhibitions. The focus of the combinations being of great length makes them unsuited for small rooms. I have no doubt Mr. Coombe was right in his conjecture, and that the so largely magnified pictures he saw were themselves of large size, and the apparatus of a size to match. I should consider 10 or 12 feet diameter a fair sized picture to be shown well by the oxycalcium light. A bag of oxygen gas can be made at home, or on the spot where it is to be used, over a common fire with the greatest ease and safety, and this latter plan is best, as it prevents the bag from being worn by friction in carriage, and the gas is safer to use, as being freshly made; the time required for this purpose is not much when practice has accustomed the exhibitor to the use of the apparatus.

Capt. Turton.—In our next.

J. F. S.—The formula is printed as we received it.

Erratum.—Instead of W. Grant, reported in our last as elected a member of the Photographic Society of London, read W. J. A. Grant.

Several Articles are compelled to stand over until next week for lack of space.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 603.—*March* 25, 1870.

CONTENTS.

PAGE

Cameo Medallion Portraits 133
Fargier's Carbon Parent 133
American Correspondence 134
The Carbonate of Silver Paper. By Dr. J. Schnauss 135
On the Retouching of Negatives. By J. Grasshoff 135
On Photo-Printing and Heliographic Processes. By Robert H. Courtenay 136
The Collodio-Chloride Process. By John Spiller 136
Method of Copying Statuary in Varied Positions on One Plate. By George William White 137

PAGE

On Errors of Perspective in Portrait Photography. By Dr. H. Vogel 138
Prints and their Production. By S T. Davenport 140
Correspondence.—Is Photography Declining—Photo Acceleration—Manchester Exhibition—Female Photographers—Pretsch and Photo-Galvanography—Fargier's Carbon Patent 140
Talk in the Studio 143
To Correspondents 144
Photographs Registered 144

CAMEO MEDALLION PORTRAITS.

We have seen some examples recently of a novel and effective style of portraiture, produced in Italy, which would probably prove attractive if introduced into this country; we shall, therefore, briefly describe an example before us.

It is of the usual card size, containing a large vignetted head and bust. After vignetting, an oval mask is laid upon the figure and vignetted portion of the background, and the margin exposed so as to print a deep black, forming a dark border round an oval aperture containing a vignetted image. This is finished, trimmed, and mounted in the ordinary manner; after which it is enamelled by means of gelatine and collodion, by means of the process we have often described. After this it is subject to pressure under an oval convex die, like that used for the "diamond cameos," the die being, of course, of precisely the same size and shape as the oval mask which protected the image whilst the border was printing. The size of the oval in the example before us is, in the major axis, two inches and three-quarters, and in the minor axis two inches and one-eighth; but might, we think, be slightly improved in its proportions. The white edge of the mount surrounding the black framing the image is about one-eighth of an inch broad.

The general effect of the picture is striking as well as novel. The convexity of the mount gives the effect of relief with which many of our readers are familiar, and which is seen in enamel portraits on the well-known convex tablets. Indeed, these portraits in many respects very closely resemble ceramic portraits, in the appearance of delicacy, force, and finish. The especial advantage to be gained by the deep purple brown or black of the border is the peculiar delicacy conferred, by the force of contrast, on all the half-tones and shadows in the image itself. Most portraitists have observed that the face which will look dark, almost dirty, when in contrast with a white or light background, seems light, bright, and delicate when contrasted with a very dark background. No lesson is more strikingly enforced than this in the portraits of Mons. Adam-Salomon, where the prevalence of deep shade in backgrounds is made to give such value to all the lights, and such especial delicacy to the flesh. The very deep-tinted spandril here serves the same purpose, and gives an effect of brilliancy to the lights, and extreme tenderness and delicacy to all the shadows in the image, although the picture is printed sufficiently deep to secure vigour and force.

The effect may be easily tried by all who have the presses used for "diamond cameos," as the only additional requisite would be an oval die sufficiently large for a single image on the card; and all photographers requiring some novelty to stimulate business will find this, amongst others, worthy of attention.

FARGIER'S CARBON PATENT.

The rapidly growing interest in pigment printing has induced in many experimentalists a desire to know the precise position of the art prior to the processes of Swan and Johnson, and we have had various enquiries as to the exact details of Fargier's process, an erroneous impression prevailing in many minds to the effect that it is, if not a very practical process as it stands, one so nearly practical as to afford ready facilities for dispensing with the operations of Swan's and Johnson's patents. The simplest method of setting the mind at rest by dispelling any such illusion is to reprint the specification of Fargier's patent, which is dated April, 1861. Here it is:—

This invention consists in obtaining by the aid of powdered coal, as hereafter fully explained, photographic pictures possessing all the gradations of shade from black to white. The invention is based upon the fact that when a substance more or less translucid is sensitive to the action of light, this action commences at the surface, and continues gradually to the interior.

The invention is thus carried into effect, the materials employed being bichromate of potash, gelatine, and powdered carbon, which are used in or about the following proportions:—In 31 cubic inches of water dissolve in a water bath 123 grains of clear gelatine, as free from alum as possible (perfectly pure gelatine is preferable), then crush in a mortar 15 grains of lampblack, charcoal dust, or other suitable black, previously washed with carbonite of soda, and then with hydrochloric acid, to remove all fatty and resinous matters that may be present in it. It will also be well to calcine the black, to destroy all organic matter. Add a few drops of ammonia, to decompose any alum that may be contained in the gelatine, and dissolve in the mixture about 15 grains of the bichromate of potash. The mixture thus prepared is filtered through fine linen, and is ready for use. It must be kept in such a temperature that it will always remain in a liquid state. To use the preparation, pour a coat of it upon a well cleaned and plane surface (such as glass), dry it, not in direct contact with the fire, but by preference upon a metal plate, care being taken that the temperature does not reach 212° Fah., then place the glass in an ordinary frame, the sensitive coating in contact with the plate to be copied; the picture becomes formed on the surface of the coating after an exposure of from one to four minutes to the solar rays, and after a more prolonged exposure to diffused light according to the intensity of the light and the sharpness of the plate; return the glass to darkness, and pour upon the gelatine a coating of non-iodized collodion; next plunge the glass in hot water (and this may be done in the light), remove the collodion from the glass, take away the glass, and the sheet of collodion floats in the water, showing the picture, which has now become visible. After a few washings the picture is received upon a sheet of gelatinized paper or other suitable surface. Gum or albumen may be substituted for gelatine, and instead of collodion a sheet of prepared paper may be used, but the picture is then reversed; the collodion may be iodized or contain different salts, which will increase its adherence. Finally, the coat of collodion may be removed from the picture by alcoholized ether or other solvent.

The process may be modified in manner following:—Take a sheet of paper, the thinnest possible, and made from homogeneous pulp; apply one or more coats of the gelatinous solution herein-before referred to, dry it, and place it in the frame upon the plate, not on the gelatinized, but on the opposite side; after an exposure to light for a longer period than directed in the process first described, a

> reversed picture is obtained on the surface of the paper, which becomes detached by washings in warm water. The transparency of the paper may be increased by rubbing oil or grease into it, and, after drying the gelatine, gold-beaters' skin may be used. In order also that the sheet may remain stretched out while the gelatine is drying, it may be made to adhere to a glass or other flat surface.
>
> A further modification is as follows:—Spread upon a glass a first coating of the gelatinous solution, but without powdered coal; dry, and expose for a few minutes to the light, and then in the dark; apply over the first coating a second coating with the powdered coal; allow to dry; place the glass in the frame upon the plate, not on the gelatinized, but on the opposite side; expose to solar rays, and the picture is obtained upon glass, from which it is removed by washings in warm water.
>
> The three modifications of the process are based upon the fact before cited. The action of light coagulates the gelatine, and retains it on the surface of the collodion, of the paper, or of the glass with the powdered carbon.
>
> And having now described the nature of the said invention, and in what manner the same is to be performed, I declare that I do not claim the mixture of bichromate of potash, of powder, and of organic substances, such a gelatine, gum, or albumen; but I claim the several methods herein described of producing and developing photographic pictures in order to obtain perfect gradation of the tints or shades of the image.

It will be seen that three modes of carbon printing are comprehended in this specification. In the first a plate of glass is coated with a mixture of gelatine, carbon, and bichromate. This glass is exposed under a negative, then coated with plain collodion, and plunged into hot water. The coating of prepared gelatine, being softened and partially dissolved, leaves the glass, and floats in the water attached to the collodion film. The side of the prepared gelatine film opposite to that exposed to light being now in contact with the hot water, the image in due gradation of half-tone is developed, and the collodion film on which it rests is finally mounted on gelatinized paper. Very perfect gradation was easily obtained in this way; but the two great sources of inconvenience—exposing a plate of glass in contact with the negative, and the difficulty of mounting a floating film—rendered the process of little practical use, especially for pictures of large size. A sheet of paper, it is added, may be used instead of the film of collodion for transporting the gelatine containing the image from the glass; but in such case the picture will, of course, be reversed.

The second process was not new. It consisted in coating extremely thin paper—the transparency of which might be increased, it was said, by oil or grease—with the sensitive pigmented gelatine, and exposing this, its unprepared side, in contact with the negative, so as to print through the paper. Mr. Blair had done this, and described it two years previously, using the more suitable substance wax, instead of grease, to make the paper transparent.

The third method is a slight and apparently useless modification of the first.

The great step in advance made by Swan was the preparation of a distinct tissue, which permitted of exposure to light on one side, and then allowed, by a simple method, exposure to hot water on the other side. With the more recent improvements of Johnson our readers have been made familiar.

AMERICAN CORRESPONDENCE.

The "Old Photographer" and Photographic Discovery—The Danger of Claiming Photographic Discoveries.

The "Old Photographer" and Photographic Discovery.—I have been a great deal amused reading the remarks which the spirit of the "Old Photographer" seems to have moved him to make concerning the statement my friend Mr. Hull is reported to have made recently at a meeting of the Photographic Section of the American Institute, N.Y. All the young blood of the "Old Photographer" seems to have risen within him, and Mr. Hull's few carelessly made remarks are taken as a text for a regular Caudle lecture.

If Mr. Hull did say that "the old world usually claimed as their own whatever happened to be first produced in the new"—and I do not believe he did—I think he spoke rather hyperbolically. He has, I know, felt a little sensitive respecting one or two little matters which he seems to feel that he originated, and which have afterwards been described in our English contemporaries as English inventions; but Mr. Hull is not the man to make the sweeping remark that he is reported to have made. One of our earliest amateurs, and one of our most ingenious and skilled, he has grown up with photography, and knows its history well. He would not, therefore, place on record any such assertion.

However, assuming that he did make such a remark, should we, at this late day, begin to argue who has discovered and done the most? We have before us a grand and beautiful structure. The work *is* done. Although it was founded on a most insecure and treacherous foundation, we have worked at it until we have strengthened and petrified it, and it will now stand the test of ages. The proportions of our building are beautiful, and each year—nay, almost each month—some niche is adorned with a new statue, emblematical of some new creation. Our spire rises higher each year, and only Heaven knows when it shall be finished. Now, is it for England, or France, or America to say, "This is my work"? "I erected this monument in memory of the greatest of the arts"? I tell you nay! The Old World may look upon herself, without egotism, as the parent of our great art—as the discoverer, if you please. But what nation took it up more readily, and extended and improved it more, than did this new country? Adventurous young men made pilgrimages to Europe by the dozen to be taught the great secret, and ere many months had elapsed better and larger pictures were made here than at the birth-place of photography. So has it been ever since. America may not be famed for making exposures in the art, but she is a most rapid and energetic developer.

Let us not, then, argue this matter. We all agree that the structure is imposing and grand. We love to worship at its sun-lit altar. Let us not, then, trouble ourselves to learn who of us did the most towards its erection, but zealously strive to see who can do the most towards promoting its further beauty and strength. There are many niches to fill yet, and a high spire to finish. All hands at it, then, in unity and peace. "Let us have peace."

The Danger of Claiming Photographic Discoveries.—The "Old Photographer's" bantering reminds me how dangerous it is in these times for any one to announce that he has made a "discovery" in photography. He says:—"I should like to ask those American photographers," &c., &c., "to point to one important American modification or improvement," &c. Permit me to answer for American photographers. No, good and venerable friend, we cannot do so; it would be dangerous; it would cause us to be contradicted, no doubt; and when we are contradicted we are always dissatisfied. Whenever I see a man, or hear tell of one, making the announcement that he has "discovered" something "very valuable to every photographer" (and you, experienced Editor of the News, know how often this is done, and how often it is your painful duty to gradually quiet down such people), I think of an old experiment we used to try at school. A gold coin was placed in a tin basin filled with water; one pole of the battery was then placed in the basin of water with the coin, and the other was handed to any one who was willing to take it in one hand, and with the other hand remove the coin from the basin. Many to whom the experiment was new made the attack with amusing vigour; but the instant their empty hand touched the water it was powerless, and they had no desire to repeat it. Others, again, would try and try again, probably succeeding in seizing the coin, but were unable to lift it out. So I have often noticed it to be with those who announce photographic discovery. The appearance of their assertions in print is the signal for the most abusive and unkind attacks from those who should thank them, and, if they were wrong, correct them kindly. We often hear the complaint that photographers do not tell all they know, and, as it was asserted in the News a short time ago, only the "dross" is given to the journals. Now, the photographers themselves are to blame for this, if it be a fact. I personally know of two, and perhaps more, really talented men—one, a most skilful practical chemist, and the other, once editor of a photographic journal in Europe—who will not write a word of their experiments, simply because of the ugly attacks that have been made upon them from time to time. One says:—"Writing what one knows, to appear in print, is a delusion and a snare." The other, to whom we are indebted for a most valuable and much practised process entire, refuses absolutely to communicate any further for the good of those who have abused him so. Neither is this right; and it is a growing evil, this abusive practice, or practice of abuse, which should be cured, and I believe the editorial scissors ought to begin the cure, allopathically, if necessary. Lack of kindness and courtesy, I am sure, has locked up many a bit of information valuable to us all.

THE CARBONATE OF SILVER PAPER.

BY DR. J. SCHNAUSS.*

In Paris a photographic albuminized paper is being commercially manufactured, bearing the inscription, "Papier sensibilisé au carbonate d'argent." It is packed in red paper, and may be kept without injury, from the fact that in its ordinary state it is but little sensitive to light. The method of employment is thus described:—"The carbonate of silver paper is exposed to ammonia vapour for a period of twenty or thirty minutes, then laid at once upon the negative, and covered with a sheet of parchment paper. The ammonia absorbed by the paper is thus confined between the negative and the parchment paper, and causes a more rapid production of the print. The paper may be kept in the ammonia fuming-box for a very long time, and is thereby improved; unfumed paper will keep for an indefinite time in the dark. Before toning in the ordinary way, it is necessary that the print should be washed; but when a rhodan gold bath is used, such an operation is not required. The formula for the rhodan gold bath is:—

Sulphocyanide of ammonium ...	30	grammes
Fused acetate of soda	30	"
Common salt	15	"
Water	1,000	"
Chloride gold (dissolved in a little water)	½	gramme

A little gold solution must be added from time to time. The prints become darker on fixing."

On examining the paper, I found that by pouring over its surface a little sulphuric acid, not the slightest sign of effervescence was to be detected; by digesting the paper in water mixed with sulphuric acid, and subsequently testing the mixed liquid with hydrochloric acid, not a trace of turbidity was apparent, proving, therefore, that neither nitrate of silver nor carbonate of silver was contained in the paper. Its designation "carbonate of silver" is thus shown to be perfectly erroneous, although ammonia, nevertheless, possesses the power of calling forth from the paper chloride of silver. If we take into consideration the results of these experiments, and likewise the instructions given by the manufacturers as to the fuming of the paper, no very acute perception is necessary to discover in this Paris material an article identical to that obtained on following M. Baden's recently published process, which that gentleman has so generously and frankly placed at the disposal of his brother photographers, and which consists simply in washing the chloride of silver albuminized paper after being sensitized. In making this statement, it must be borne in mind that I do not presume to assert that the Paris firm prepares its paper in the same manner as that indicated by M. Baden.

The recently repeated recommendation of Mr. Jabez Hughes, to wash the sensitized plate perfectly in distilled water after its exit from the sensitizing bath, an operation stated not to interfere in the slightest degree with the sensitiveness of the negative, conclusively proves that the presence of nitrate of silver is unnecessary in the process, provided it is added before or during development; and the same holds good in regard to paper printing. The subject is, nevertheless, one deserving of thorough investigation.

ON THE RETOUCHING OF NEGATIVES.

BY J. GRASSHOFF.*

"The retouching of negatives is but a passing caprice of photographers," was recently the substance of a remark made by one of my friends, himself an operator of well-known reputation, who, moreover, on my representing the necessity of the practice, added the following: "I have till now done a good business without the aid of retouching, in that degree to which it is carried in the large bomb-headed cartes-de-visite seen now a days. The alleged reason of this retouching is to produce delicacy, but it is artificial delicacy, and unlike the natural beauty given by the camera. For this reason I shall continue to carry on my business without having recourse to the production of extraordinarily delicate negatives." How far my friend is right, I must leave each reader to determine for himself; everybody has his own particular opinions, and it is a happy thing that tastes do differ. That negative retouching, especially in portraiture, is, however, a matter of necessity, needs no affirmation on my part, and the results frequently obtained by artistic treatment are moreover well known. I therefore beg to be allowed to communicate several improvements which have recently been made in this particular branch of photographic manipulation.

It is a known fact that any negative varnish allows of a slight retouching. By rubbing the surface with *ossa sepia*, I was enabled, as I have already pointed out, to obtain a matt surface which proved very suitable indeed for manipulation with the pencil. Other materials I had previously employed for the purpose; such, for instance, as powdered pumice, which, however, was found to scratch the negative, and thus injure it, and for this reason I continued to employ the *ossa sepia* until M. Petsch recently made known that he had been successful in producing a fine matt surface upon the varnish film with pumice stone. The material with which I myself had failed to obtain good results had been drawn from different sources of supply, and it occurred to me that possibly the powder was not sufficiently fine for the purpose. I therefore again submitted it to the processes of levigation and sifting, and thus obtained a material which proved particularly suitable for my work.

Nevertheless, considerable care is necessary in the application of this material. The film of varnish must not be too thin: and, moreover, the finger must be held perpendicularly, and pressed down with some weight, for if the rubbing is done horizontally, and with a soft surface, the operation is a long and tedious one, and the result is a polished rather than a rough surface. By proceeding in the manner recommended, and taking not too small a quantity of pumice stone (about as much as will lie upon the point of a pen-knife, for a carte negative), the hard negative varnish is ground in a few seconds as matt as a paper surface. The powder is subsequently well brushed off with a camel-hair pencil, and may be used over again.

The character of the varnished film is, by this means, entirely changed. While in the ordinary way it can be worked upon only by soft pencils, in order to obtain very delicate retouching, I am now enabled to employ almost universally Faber's No. 5 and 6 pencils; indeed, with freshly varnished plates these hard pencils were even found to rub off too freely, and I obtained, therefore, some of the so called metallic pencils, or silver pencils, consisting wholly of lead, with which I am well content. The circumstance that in falling down, or other similar accident, the point of the pencil is bent, and not broken, is an advantage. I have remarked, moreover, that retouching with these silver pencils is not so easily removed as that furnished by graphite, each stroke being of a light colour, but very adherent.

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* *Photographische Archiv.*

* *Photographische Mittheilungen.*

The whole process of negative retouching is thus considerably facilitated; but I would, at the same time, remark that it is impossible, even with the most artistic retouching, to obtain an effective picture from a bad negative, and that it is best to dispel at once the illusion that an inferior plate requires merely to be retouched to afford the most brilliant results.

I now come to another subject, of which I have already spoken on a previous occasion. The recommendation has often been repeated to retouch the negative previously to its being varnished, and as I, indeed, last summer stated, I endeavoured to effect this by coating the dry collodion film with an amber solution instead of the gum or gelatine ordinarily employed. After some experience, I can now confidently recommend this mode of proceeding, which is specially fitted for such negatives requiring considerable manipulation, and from which a large number of copies are to be printed, the retouching upon the plate being efficiently protected from accident. Negatives thus prepared may be freed from dust, &c., by means of a moistened sponge with impunity, the permanence of the varnish being actually improved by the elastic character of the amber coating.

The nature and character of amber varnish I have studied for a considerable time, having experimented therewith, with a view of ascertaining whether it is possible to add to it any substance capable of improving it as a basis for retouching. It can be applied in the ordinary manner, either to warm or cold plates, but the latter should be continually moved, while in a slanting position, for some time during the draining of the liquid, in order to prevent streaks, and afterwards allowed to dry in a locality free from dust. In a warm atmosphere a lapse of three or four hours is sufficient to dry the film and render it suitable for retouching purposes, but in an ordinary way, eight or ten hours are requisite for the purpose. The amber surface is rendered matt with pumice in the same way as ordinary varnished negatives, but much pressure is not necessary in rubbing on the powder, and care should be taken not to allow the warm finger to stick to the film. A proof may be taken, and the negative again retouched if necessary, a varnish of very dilute consistence being afterwards applied to the slightly warmed negative in the usual way. If the amber solution becomes thick by evaporation of the solvent (a very stout film is, in my opinion, unnecessary), it is diluted by the addition of pure oil of turpentine, and filtered in the ordinary way, It should yield a brilliant surface, like common negative varnish.

ON PHOTO-PRINTING AND HELIOGRAPHIC PROCESSES.

BY ROBERT H. COURTENAY.*

The specimen prints which are now submitted to the notice of the Society were obtained by certain new processes for which letters patent were granted to me in December last, and in regard to which I beg leave to offer the following brief description.

The printing-surfaces, whether intaglio or in relief, are of copper deposited by the electrotype process, and strengthened, when necessary, by the well-known method of backing the plates with solder or type-metal. The matrix upon which this electro-deposit is formed is a mould produced by the action of light upon a sensitive layer composed of gelatine or size in admixture with gum tragacanth, sugar, and a salt of chromic acid, preferably that known as the double chromate of potash and ammonia. After development by immersion in water, and washing away the parts unacted upon by light, or swelling the same according to the subject, the surface of the gelatine is at once hardened, its texture improved, and power of conducting electricity imparted to it by chemical processes in which solutions of silver and iron are successively applied, when the first-named metal becomes reduced in a very finely divided state. The process is materially aided by brushing over the wiped gelatine a powdery or finely reduced form of silver, obtained by placing in a solution of the nitrate some scraps of pure electrotype copper, washing and drying the product for use. Silver, being such an excellent conductor of electricity, induces an immediate precipitation of deposited copper all over the mould when contact is made with the battery, or the gelatine itself, already connected, immersed in the copper electrolytic solution.

The mode of operating is as follows:—For intaglio plates a photographic negative is first taken, and this is copied so as to give a transparent positive upon a special collodion charged with a certain proportion of precipitated silica, obtained by decomposing "water glass" by hydrochloric acid, and evaporating to dryness. The addition of silica in the manner suggested has the effect of producing a delicately grained surface in the resulting photograph and subsequent copper-plate impression, which is peculiarly well fitted for taking the ink in the printing process. Finely powdered glass may be used with a like result. Upon a glass plate is then spread the bichromated compound described above, and, when dry, the glass positive is placed in contact with it in a pressure-frame, and exposed to light for a time sufficient to give the desired result in the shape of a gelatine mould, which, while still moist from development, is treated with sulphate of iron, washed, wiped dry with chamois leather, and the surface brushed over with the silver powder, as already explained, immersed in or coated with a mixture of nitrate of silver and grape-sugar, and finally treated with a solution of sulphate of iron. From this gelatine matrix a copper fac-simile in intaglio is then obtained, as stated, by the electrotype process, and the high lights burnished to give a more brilliant effect.

When it is desired to produce surface-blocks for machine printing, as with type, the relief in copper is obtained by a similar process, using, however, a photographic negative instead of a positive copy for impressing a suitable image upon the bichromated gelatine. A greater amount of vigour may be obtained by scraping away the tint in the high lights, or applying strong gelatine to these parts of the matrix before electrotyping. For litho-printing I produce a direct transfer in printer's ink from the negative, ingrain on to a paper prepared with the composition above indicated, and lay it down upon stone, or a metal plate, to be worked in the ordinary manner of lithographic processes when a small number of copies are required.

Thus, then, it will be seen that my operations are applicable to the production of printing surfaces in intaglio, such as are used in the ordinary copper-plate press; secondly, by the modification pointed out, a raised or surface-block may be produced suitable for letterpress printing; and, lastly, by the system of transfer, designs may be obtained upon stone or metal plates to effect what is known as photo-lithographic printing.

THE COLLODIO-CHLORIDE PROCESS.

BY JOHN SPILLER.*

It is certainly a matter for surprise that a process capable of such practical application and beautiful results as the collodio-chloride or Simpsontype method should have received so little serious attention in the land of its birth, while the efforts made abroad to secure its aid in the fulfilment of various photographic manipulations are as ingenious as they are frequent. This fact can only be explained by a certain lethargy or *nonchalance* on our part to take up a new process; for it is perfectly certain that any one making trial of the method cannot fail to be charmed with its beauty, and, at the same time, convinced of the many facilities and improvements which it promises.

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* Read before the Photographic Society of London.

* *Journal of Photographic Society.*

It is true that the process when first made known was scarcely so perfect as it is at present; but the improvements effected have been of an exceedingly simple and obvious nature. When we have mentioned the operation of fuming the collodion surface with ammonia vapour, suggested in the first instance, we believe, by M. A. de Constant, of Lausanne, there is no other modification of note to be enumerated which would not necessarily be practised by operators of ordinary ability. Albuminizing the glass plate previously to its being coated with collodion, and the substitution of one chloride for another, have not, in our experience, materially benefited the character of the results.

We have very recently had our attention again drawn to the process, and, as might have been anticipated, by a gentleman from abroad. Everywhere but in England, it would seem, the collodio-chloride method has been fully appreciated. In America, pictures, for the most part upon glass, have been produced with wonderful success, while in France the leptographic paper, in Germany the Obernetter paper, and in the North that of MM. Sander and Risse, of Nordon, are all well known. Indeed, if this latter material could be made at a somewhat more reasonable price, and greater adherence of the sensitive film to its basis could be ensured, the employment of these papers would, no doubt, be almost universal. As M. de Constant has shown, in a recent communication on the subject, it is possible, by changing the character of the chloride employed, to secure a tint of almost any colour. Thus, magnesium imparts a grey tone, calcium black, cadmium violet-black, strontium, sepia, and lithium a rosy hue; other tints may, of course, be secured by other chlorides, or by mixing the above in different proportions.

Dr. Van Monckhoven, who employs the method exclusively in the production of positives for his enlargements, recommends a different formula from that originally laid down by Mr. Wharton Simpson; but, on the other hand, M. de Constant distinctly states that all his pictures have been secured by the use of the original recipe, with the additional aid of fumigation. We have lately had occasion to have recourse to the method, and have taken the opportunity of employing three different descriptions of collodion, made up with the chlorides of magnesium, strontium, and calcium respectively. The result was exactly that foretold by M. de Constant; a grey tone was obtained by the magnesium (Dr. Van Monckhoven's collodion), a light sepia from the strontium (Obernetter's collodion), and a brown tone from the chloride of calcium (Simpson's collodion.)*

Before going further, we should mention a slight modification which we took the liberty of making of Dr. Van Monckhoven's recipe. That gentleman recommends the use of crystallized chloride of magnesium; and inasmuch as this compound is difficult of production in a dry state, owing to its tendency to decompose as the last drops of water are being driven off, and as it was not at the moment otherwise procurable, we employed instead, for the purpose, an aqueous solution of the chloride, mixing therewith an alcohol of lower specific gravity than that specified, in order to make amends in the formula for the amount of water contained in the chloride. The tint obtained in this way was a dark grey, the collodion behaving in like manner to the other two, although lacking somewhat of sensitiveness—a fact possibly due to the non-employment of the crystallized chloride.

Fumigation was used in all three instances, the plates being subjected for a period of about three minutes to the action of the fumes of liquor ammoniæ placed in a vessel three or four inches below them.

As regards the value of the results obtained with the three chlorides, but little doubt exists in our mind. The light sepia tint furnished by the strontium, which increases but very slightly in vigour by fumigation, is the least satisfactory, although doubtless susceptible of application in certain directions; on the other hand, the magnesium and calcium, yielding respectively grey and brown tones, gave very practical results, suitable, however, to our thinking, to different descriptions of work. The grey tone of the magnesium, being light and transparent, would appear admirably adapted to the purpose for which Dr. Van Monckhoven has chosen it, viz., for the preparation of transparencies for enlarging. Where, however, a *cliche* is required for direct printing, the opaque, non-actinic, brown film of the calcium is more suitable, as it yields a more brilliant and vigorous copy.

The operation of toning is a matter to which we have not yet directed our attention, as our employment of the process on the present occasion was merely as a means to an end, for the reproduction. indeed, of old silver prints in permanent pigments; and for this purpose it was obviously best to allow the *cliches* to remain in their vigorous untoned condition. Dr. Van Monckhoven, however, states that the operation of toning is a valuable and additional means in the hands of the operator of modifying the intensity of the *cliche* if the same had been overprinted, and recommends in such case the transformation of the original colour of the film into a more subdued and actinic tint by careful toning; for this purpose a sulphocyanide bath is said to be exceedingly effective.

In conclusion, we would again recall to the memory of our readers this valuable process, which, at the present moment, especially in Germany, is receiving considerable attention. Although it may not be feasible, as the process at present stands, to utilize it universally in the production of paper positives, still no doubt exists of its being capable of application with advantage in very many of our ordinary manipulations.

METHOD OF COPYING STATUARY IN VARIED POSITIONS ON ONE PLATE.

BY GEORGE WILLIAM WHITE.*

I can best explain my method by giving my first experience I had occasion to make some card copies of a small marble statue of the Greek Slave, and thinking it would make a much more attractive picture if it could be copied in a variety of positions on one card, I determined that I would attempt it. I took for the background a strip of dark brown cotton-velvet, arranging it so that the lower portion covered the top, and hung a few inches over the edge of a small stand. Placing the image on the centre of the stand, I got the proper size and focus with the ordinary camera, and made a faint mark around the base on the velvet, then moved the image to the right and left of the first position, being careful that one position should not interfere with the other, and marking around the base each time, that I might know just were to place it in the subsequent operations. I then prepared and exposed my plate, covered the camera, moved the image to the next position, and exposed, and again as before. On developing my plate, I found I had a remarkably fine negative of one object in three positions. Almost any number of positions may be obtained in this way, but the time of exposure must be lessened as the number of positions increase, and each position should receive an equal exposure.

Whether the idea is new to every one I cannot say, but that it may be a useful one to many is evident. To such I give it. Those who photograph statuary for the stereoscope would de well to try it.

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* Chloride of magnesium was employed in the collodio-chloride process by Mr. H. Cooper, jun., as early as 1864; and Mr. Simpson, although originally recommending the use of chloride of calcium, discarded it in favour of chloride of strontium in 1868. but seems now inclined to indorse the recommendation of Dr. Liesegang to employ the chloride of lithium, as being more soluble in ether and alcohol, and having a lower atomic weight. (See Year-Book of Photography for 1870.)

* *Philadelphia Photographer.*

ON ERRORS OF PERSPECTIVE IN PORTRAIT PHOTOGRAPHY.

BY DR. H. VOGEL.

In my former paper I showed, by means of a diagram of a section of a pillar with sloping sides (which I here reproduce, fig. 1),* how an object is rendered broader by distance. This is, however, by no means the case with all bodies, as, for instance, with those presenting hollow spaces. Let us suppose a hollow box, A B C D, with sloping sides, as shown in the sketch, fig. 2. Seen at a distance from P, nothing of the side surfaces are observable, whereas from O they are distinctly visible. If, therefore, two pictures are taken of this box at different points of view, that obtained at a distance will appear narrower, and that secured closer at hand will seem to be broader. In the same way it is clear that the nearer I approach such hollow space, the broader will its side-walls appear; this holds good, also, with spaces with straight sides, as shown in fig. 3.

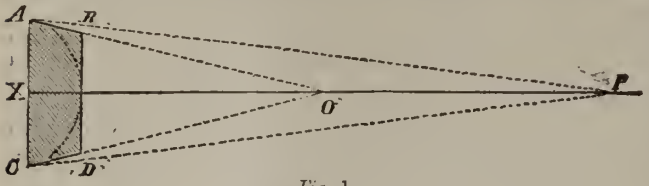

Fig. 1.

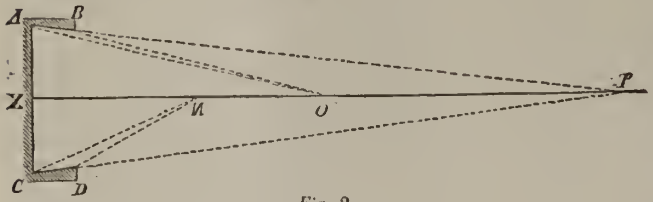

Fig. 2.

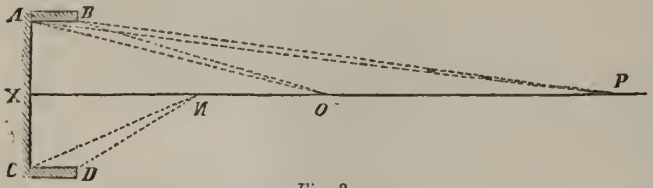

Fig. 3.

In the treatment of recesses, therefore, the reverse takes place to that which occurs when dealing with prominences, the latter becoming broader by distance, and the former narrower, provided always that the objects reproduced occupy the middle of the field. In this way is explained the prominent elliptical form of the pedestal and the strongly marked top of No. 1 bust, both of which points in No. 2 appear more contracted, having suffered from a directly opposite influence.

Now, in every figure we find recesses combined with prominences. The forehead stands out, the eye-recesses are hollowed; the nose again is prominent, as also the chin, and then follow the retiring neck and the expanding chest. If such a figure is viewed from a distance, the prominent features will be apparently broader, while those in the recesses will contract; and it is just these changes effected in an opposite direction which appear to the eye so marked a contrast, although the actual exaggeration of the features themselves is unimportant. A slight broadening of any particular feature would, perhaps, be inappreciable if there were not next to it a recess which had suffered contraction. This is well seen in the Apollo heads; the head of No. 1 seems appreciably narrower than No. 2, and yet, on measuring, no difference whatever is found to exist between them.

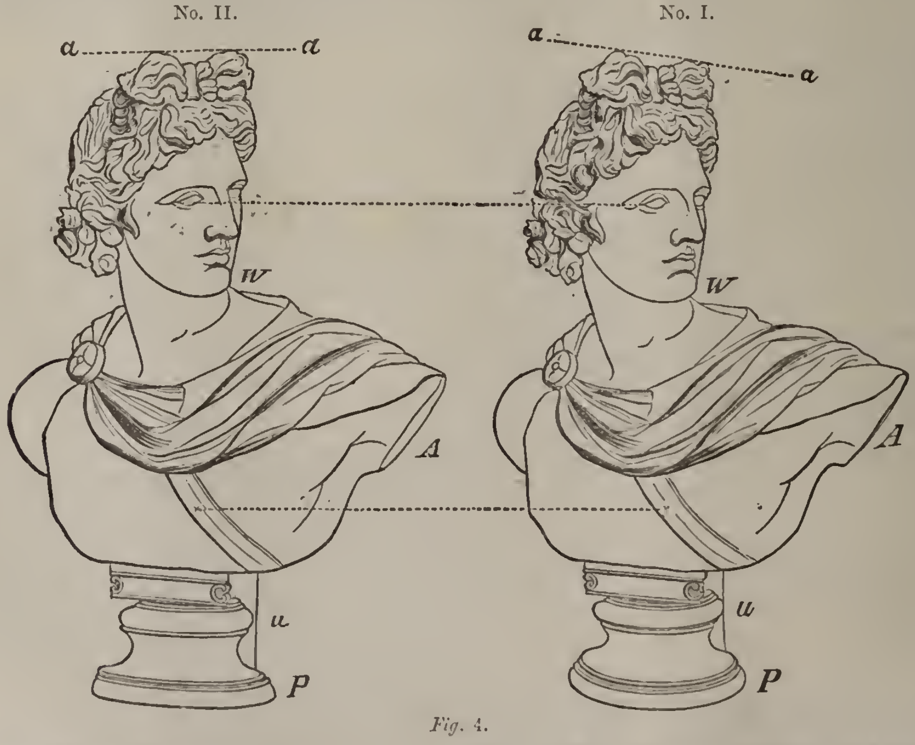

Fig. 4.

Effects of Angle of Vision.

The errors of perspective alluded to in the first portion of this chapter appear likewise when the angle of vision is comparatively small; if this angle is, however, increased, as is the case in the globe lens, other strange phenomena arise.

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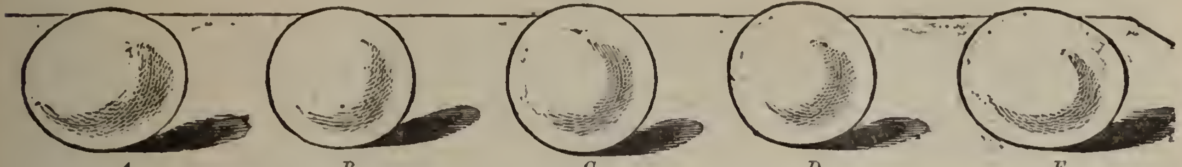
* In the former article diagram No. 2 was erroneously given instead of No. 1.

To give the reader a striking example of this, I have annexed a photo-xylographic reproduction of five balls, fig. 5.

Fig. 5.



A painter seldom sketches a ball otherwise than as a circle; central perspective, on the other hand, reproduces only such balls as circles which occupy exactly the centre of the field, those at the margin, when the visual field is large, being represented of egg-shaped form, a circumstance easy of explanation. Let us suppose three balls, A B C, fig. 6.

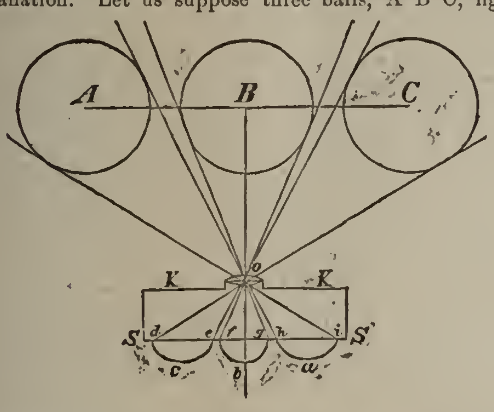


Fig. 6.

Each ball sends a conical ray to the optical centre of the lens *o*, and these cones are cut by the focussing-plate S S, and yield the pictures *f g*, *h i*, and *d e*. The sections of a cone are, however, very different (see fig. 7), for if the plane, K K, is perpendicular with the axis of the cone, the figure produced is a circle, while if diagonal (as E E), the image is an ellipse. It therefore follows, as a matter of course, that the diagonal conical rays from A and C (fig. 6) would produce not circles, but ellipses. In the picture of the Berlin Synagogue, taken at a very short distance, in which the cupolas of the side towers appear lengthened and inclined towards each other, the error lies in the perspective, and must on no account be attributed to the lens.

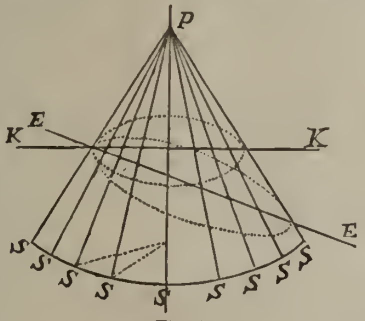


Fig. 7.

A much more remarkable instance of these errors of perspective I observed in a photograph of a palace before which had been placed a row of statues, the latter being increased in breadth and thickness the nearer they were to the margin of the picture. Defects of a similar nature are often remarked in pictures taken at a short distance with a wide-angle lens.

The well-known relief of the Beuth monument I reproduced with a corrected wide-angle lens and a Steinheil instrument at the distances of 3¾ feet and 8¾ feet, obtaining two pictures of equal size, but possessing totally different outlines. In the Steinheil picture (fig. 8) the outline appeared more profile, whereas in the wide-angle lens picture (fig. 9) the figure appeared perceptibly turned round and broader, the head seeming to be almost dropsical, and the feet standing more outwards.

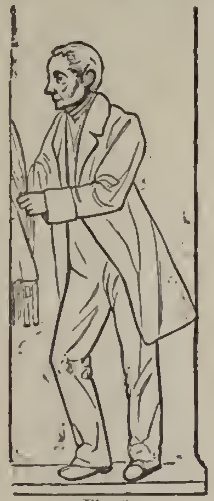


Fig. 8.

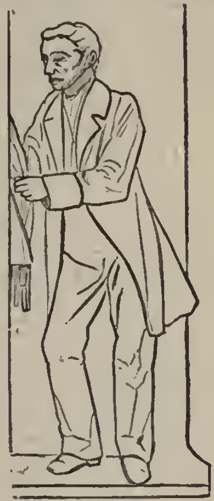


Fig. 9.

Errors of this kind are much more apparent in architectural and landscape views when the angle is very large, but in portraiture they are, nevertheless, observable. In order to discover how far the errors extended, I examined the visual field of the four balls, fig. 5, and found that with the two inner balls, B and D, which show only a slight mis-drawing, the angle was 35°, while for the outer balls, which are much exaggerated, the angle was 64½°. This angle, it will be acknowledged, is not extraordinarily large.

In general, portrait lenses possess only a narrow angle of view, although in some of more recent construction the sight has been widened to allow of the taking of groups at short distances, as, for instance, the patent Dallmeyer lens

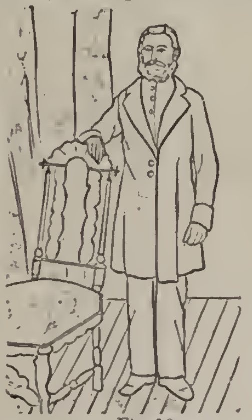


Fig. 10.

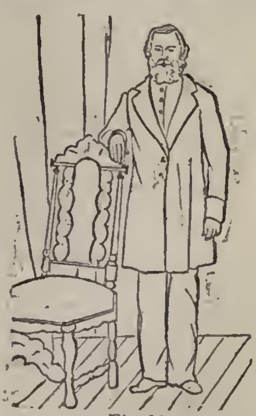


Fig. 11.

and universal triplet. In both these instruments, with full aperture, the angle amounts to 15°, and in them the errors above alluded to would be apparent in figures on the exterior of a group picture.

Other errors of a peculiar character are again met with in photographing single figures. It is not unfrequently a matter of necessity to take a full-length portrait in a very short studio, and for this purpose the employment of a lens of very wide angle is required; the very different results obtained with a lens of this kind, and with an ordinary portrait lens at a sufficient distance, are shown in figs. 10 and 11.

In fig. 10, the steeply rising floor is at once remarked, conveying the impression that the figure is in danger of slipping off it altogether, and the feet, as also the different parts of the chair, are rendered very prominently. The whole picture has, indeed, the appearance of having been taken by a camera inclined downwards towards the object; and this leads to the third part of my subject, viz., the inclination of the apparatus in operating.

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PRINTS AND THEIR PRODUCTION.

BY S. T. DAVENPORT.*

Prints from Gelatine.—I must now refer briefly to prints from gelatine, as allied to photo-zincography. They result from two of the most important, as well as the most recent, discoveries which have been made in reference to the reproduction of prints from photographs, and that in a permanent form, viz., M. Tossier du Motay's process—an account of which was first published about eighteen months since—and Herr Albert's process, known as the Albert-type process, for the first account of which, as well as the first examples of the process published in this country, we are indebted to Mr. G. Wharton Simpson. M. Tessie du Motay's process is said to consist in the use of a thin film of gelatine and bichromate of potash spread upon a bed or plate of copper, the surface of which has been grained after the manner of a lithographic stone. The film, when dry, is sensitized and exposed to the partial action of light under a negative photographic image, which renders those portions acted on by light insoluble. The negative photograph is next removed, and the gelatine is placed for two or three hours under a fine stream of cold water, after which it is dried, and is ready to print from. The surface of the gelatine, before each print is taken, is sponged with a wet sponge, as in the ordinary lithographic process, and the soluble portion of the gelatine takes up the water, while the insoluble repels it. The film is then inked as in lithographic printing, and the print is pulled in the usual way. Through the kindness of Mr. Arosa, of Paris, by whom the process is being worked on a considerable scale, I am enabled to place before you a large number of examples of the results obtained. The process appears to be especially suited for the reproduction of architectural subjects and of sculpture, and for rendering in fine detail porcelain bodies, and no better studies of ornament could be desired to be placed before the student in art than the examples, prints of which are exhibited. The prints from the sculptured decoration of the column of Trajan, the altar of the twelve gods, and others of the examples exhibited, have not yet been published, nor, I believe, have they ever been seen by the public in this country till this evening. And it is a source of much gratification to me to be able to lay before the meeting specimens produced by a process which will no doubt excite considerable interest among all others of reproductive art in this country.

The Albert-type.—Herr Albert's process is said to be similar in many respects to that last described, but differs in respect of the bed upon which the film is placed, and which is stated in this case to be glass. It is also asserted that two films of gelatine are now used instead of one only, the first film being combined with albumen, in addition to the gelatine and bichromate of potash, and rendered insoluble by the action of light. After drying and exposure, a second bichromatized film is poured upon the first, and after drying, it is sensitized and exposed under the negative photographic image, and the negative having been removed from the gelatine block or surface thus obtained, it is inked, and used to impress the image on to paper, not in a lithographic press, as in the former case, but after the manner of block printing, the surface of the gelatine being turned down on to the paper, and pressure applied as in an ordinary copying-press. The entire absence of grain in the impressions obtained by means of this process, the perfect gradation from light to shadow, the force of the shadows, and the fact that the prints are rendered in permanent pigments, give to this process considerable importance and value. But in order to obtain satisfactory impressions by it, it is necessary that the surface of the paper should be as fine and free from grain as possible, and the character of the ink employed must be varied with the nature of the print desired to be obtained. Here I may add that the question of lithographic inks and their preparation is too frequently disregarded when speaking of the lithographer's art. Much of the variety of tone and artistic effect is due to the inks used.

Mr. G. Wharton Simpson states that the specimen portrait presented by him to the subscribers to the Photographic News is one of a series of eight copies of the same photograph printed at one operation; and further, that the twelve presses employed by Herr Albert are equal to the production of twelve thousand copies daily. I must not, however, conclude this reference to the Albert-type process without calling attention to the examples which were recently exhibited at the exhibition of the Photographic Society, just closed, and which, through the kindness of Mr. John Spiller, the Secretary of that Society, I am permitted to place before you. The specimens were expressly forwarded to this country from Munich, by Herr Albert, for that exhibition, and show the extent of surface to which the process has already been applied, as well as the degree of force obtainable, and the gradation from light to shadow yielded by the process.

Such are some of the processes which have been introduced and are at present used in copying natural objects, the drawings of artists, and in the production of original works of art.

At present I have said nothing as to the photographic processes which have from time to time been proposed to supply us with illustrations for our literature in the form of surface printing blocks. Many processes have been proposed, though but few have been successfully applied. Here, again, photography appears to come in in aid of the object sought to be attained, with what success I am able to point out by the illustrations which are exhibited, but with the details of the processes I am not personally acquainted. The most successful processes appear to be those produced by Mr. W. J. Linton, and described as a new process for engraving for surface-printing and electro-photography, or etching on glass, both which processes are claimed to be based upon Mr. Charles Hancock's system of copying drawings, engravings, or printed matter, and of enlarging or diminishing the same. In reference to the blocks produced by these processes, it is stated "that the drawings may be made in two ways, either directly upon a prepared surface of glass, or with black ink upon white paper, in which case the drawing must be reversed. When the drawing is made upon the glass with an etching needle, the glass is specially prepared with collodion; but when made upon paper it has to be copied—that is, photographed on to glass in the usual manner. The drawing is next photographically printed upon a prepared surface, and from this photographic impression an electroplate is made, which preserves, in the most minute particulars, the lines of the original drawing. From the electro-block so obtained, any number of impressions can be printed with letter-press in the same manner as wood engravings now are." The cost of preparing electro blocks by these processes is stated to vary from 1s. 6d. to 3s. per square inch.

(*To be continued.*)

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Correspondence.

IS PHOTOGRAPHY DECLINING?

Sir,—During last year there was, from time to time, much comment in your columns upon what is called the "decline of the photographic art." Your able correspondent "Protagoras" got up a very warm and interesting controversy on the subject. I can remember that "Brown," the imaginary opponent of "Protagoras," held that the "tag-rag and bob-tail" have now the photographic art entirely in their possession, but the latter stoutly denied the imputation, and informed "Brown" "that there is a decided improvement in the present class of persons who professionally practise photography, and that there is a beneficial change since the subsidence of the carte-de-visite mania.

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* Continued from p. 129.

If you will indulge me, I wish to make a few remarks on the above subject, which I hope may not be inappropriate or uninteresting.

All sensible persons must see that there is a gradual and healthy change developing throughout the photographic profession at the present time, and must hope that we will soon see a thoroughly salutary result. Our profession is gradually but successfully emerging out of the "tag-rag and bob-tail" atmosphere, and will eventually attain a more lofty and honourable position than it has hitherto been its lot to occupy. True, the mania has, to a considerable extent, subsided; but, with the mania, a host of "tag-rag and bob-tail" have gone to the wall. Men who were lamentably unfit for such a profession as this have been forced to relinquish it, and we find the art becoming more and more every day an occupation suitable only for men of taste, talent, dignity, and respectability, and not for every artisan who has a mind to adopt it. Too many have foolishly thrown aside their tools and rushed into photography with the idea of finding a gold mine; but how they have been deceived they themselves have found out, the profession has grieved to see, and the public know to their cost. How hundreds have utterly failed in earning a competency, or even a moderate livelihood, we are all aware, and how many there are who, by their indomitable energy, their intense desire to produce superior work, can hold up their heads as worthy and honourable members of an honourable profession, we all are aware too, and have just reason to admire them, and feel proud of them. Many have slaved mind and body by night and by day to bring the art forth in all its grandeur and perfection, while others, we must feel sorry to say, have scrupled at nothing to render our profession common and disreputable in the extreme. But now the tag-rag and bob-tail fraternity are finding that every man cannot become a competent photographer, and perhaps it is as well that they have got a lesson, for I verily believe that it will be the means of effectually purging the profession of the disrepute and contamination their inability and indiscretion have infested it with. "Live and let live" is, no doubt, a good charitable injunction, and may we all walk up to it; but when we find a great and honourable profession being tampered with, and the public imposed upon, it is our duty to wish the vile perpetrators completely exterminated. It is for the interest and credit of the art and the public also that we should ferret out and bring to justice and have transported for ever the tag-rag and bob-tail, and all such like.

We must have the photographer a man of brains, energy, and honour, and who will conduct his business on the highest principles of justice and integrity. How shameful that we could single out some photographers who have by their unmanly, undignified, and unbusinesslike manner of conducting their affairs brought contempt upon themselves and their art. Some of such have had their day, and the rest are tottering to their fall.

The public, we find, are becoming wiser; they are awakening to a sense of their weakness and folly; and now they will sooner pay a respectable price to a competent and businesslike photographer, than be "sold" again and again as they have been.

Such disgraceful misrepresentations of humanity as have been circulated throughout the world since the outbreak of the carte mania cannot do otherwise than tell upon the public mind, and lead them, like sane individuals, to the photographic artist, instead of the photographic caricaturist. I am firmly of opinion that those men who have struggled hard to bring the art out of the mire, and glory in raising it to a higher and more genial sphere, are those who will ultimately retain possession of the field. It is, perhaps, not difficult to point to some who will be the future strongholds of the profession; they are easily known by those who wish to see the art progress and prosper.

Well, who are they, and what are their principles, those much lauded saints of the profession? Many may ask this question. Names, of course, must be withheld, but their principles can be told. They are really competent men, and they know it. They discountenance the mercenary desire for lucre, so intense in too many who have failed and are failing. They ask good prices, though they should have less work to do. They know their ability to produce good work, and know their business too well to have to condescend to all the whims and fancies of a fickle and fastidious public. They do not send out "proofs on approval" to their patrons, show their negatives, and so on, as too many do; but, being men of superior talents, they produce first-rate work at prices to suit all grades of society, pandering to the predilections of no one, except in what may be just and courteous; and still are able to sustain a dignified and honourable position, enjoying general confidence and patronage.

In short, they set a value upon their work, knowing it to be creditable to their customers, themselves, and the profession, and will rather lose a great deal than humble themselves or disgrace their art. Those men who have the power to act in this manner are, of course, few and far between, but they are to be found; and let us honour and admire them, for they uphold the dignity of the art. They are the strongholds in the present, and will be so in the future.

It is a great pity, sir, to find men who have acquired great distinction in the profession stooping to do what appear to be fawning and humiliating acts, with the evident intention of drawing towards them public favour. I could scarcely credit that a gentleman such as he who has paid a professional visit to a very ancient town in the north would so far seek for public patronage as his advertisement indicates. He may consider it a good scheme, and very liberal, but I question if any of those "Protagoras" described would condescend further than this capable member of the profession. I consider it an evidence of condescension in business rarely to be found, and very humiliating on the part of any professional man. It is letting down the dignity and manliness of an artist when he stoops to such an act as publicly offering portraits for nothing to commence with. Many photographers no doubt humble themselves very much by giving way to a fastidious public, because sometimes they are unable to do otherwise, owing to inability and want of dignity; but for one who has been looked upon as a "star" in the profession to commence business by offering portraits for nothing is an unbusinesslike, undignified, and imprudent step, deserving severe censure, as it tends to reflect discredit upon the profession, and renders himself more humble and indiscreet than perhaps the meanest member of the "tag-rag and bob-tail" fraternity. We may well exclaim, Oh, photography, what awful absurdities are perpetrated in thy name!

It is still more vexing and lamentable that other photographers are following the unworthy example of the one above referred to, and in the same town, too. I am sure, sir, such a state of matters cannot give you any gratification, but the contrary, for you have always given place in your columns to the opinions of those who desire the elevation, and not the degradation, of the profession. The above is a poor way of trying to gain public patronage, and shows a want of manliness and dignity. What proud-spirited man would stoop to such discreditable work as this?—I am, yours, Pall Mall.

PHOTO ACCELERATION.

Dear Sir,—Your correspondent, Mr. Bovey, has, times and oft, given valuable hints and suggestions to the photographic world, through your columns; but, like Mr. Beverley, the gallic acid adjunct, in my hands, proved a decided failure, so I purchased a Dallmeyer No. 2c lens, which surpasses all additions to bath or collodion. Governors of gaols about to adopt the system of taking the photographs of their criminals would act wisely in starting with this No. 2c lens; it will be found worth the money. I do not even know Mr. Dallmeyer, therefore this is no puff. I send you a picture, the negative of which I took in two seconds with this lens on a dull day.

I wish you would write down all collodion made other than with pure ether and alcohol. Nothing is more annoying than to get hold of a collodion made with that agent of mischief to all baths, methylated spirit.—Yours very truly,

An Amateur.

MANCHESTER EXHIBITION.

Sir,—In justice to the committee of the Manchester Photographic Society and myself, it is my duty to inform you that I am responsible for the exhibition of Mr. Gordon's photographs at the recent exhibition and *soiree*; and in justice to Mr. Gordon I beg the insertion of this letter of explanation.

Having been requested by a member of the Manchester Society to send some photographs for the *soiree*, and having been asked by him to solicit Mr. Gordon to do likewise, I wrote to that gentleman, asking him if he would favour the Manchester Society with an opportunity of seeing his prints lately exhibited at Conduit Street.

The reply I received expressed regret that he had nothing to send, his prints having been given, and sent away.

At the risk of being thought importunate, I again wrote, saying that prints from other than recent negatives would be welcome, and received in reply a letter regretting he had nothing by him, and that the weather would not admit of printing.

My offence, for which I now have to apologize to Mr. Gordon and to the Manchester committee, consisted in searching amongst photographs in my possession, and sending a parcel, amongst which were several of Mr. Gordon's. This I did purely in the interest of photography, having no other motive whatever.

I now beg to apologize to Mr. Gordon and to the Manchester committee for any annoyance I have unwillingly caused them, and for troubling you with this letter.—Yours &c.,

Frank Howard.

10, *Lansdowne Road North*, *South Lambeth*.

My Dear Sir,—Will you allow me to confirm the statement of Mr. R. Manners Gordon that he was not an exhibitor at the late exhibition of photographs here, and to assure your readers that some dozen or more of Mr. Gordon's pictures were really shown. By whom they were sent I am not inclined to state.

The reporters, in going round, found these photographs with Mr. Gordon's name written on them, and naturally concluded that he was the contributor.

Mr. Gordon's insinuation that his name had been put upon photographs that were not of his production could hardly, I think, be seriously intended.—Yours faithfully,

Manchester, *March* 21*st*, 1870. C. Adin, Hon. Sec.

FEMALE PHOTOGRAPHERS.

Sir,—I shall be much obliged if you, or some of your readers, will inform me whether women are employed in this art. The plan, besides being agreeable to ladies—who are often taken in evening dress, and sometimes in fancy costume—would open a new and most suitable employment for women.—Yours, &c.

Photo.

[Ladies are already engaged in many departments of photography. They are almost exclusively employed in reception rooms, largely in the mounting, touching, and colouring, and sometimes in printing. With very few exceptions, however, ladies have not been engaged in the studio or dark room; and it is very doubtful whether the advantages our correspondent mentions would in any degree counterbalance the disadvantages of engaging them for the duties of the operator.—Ed.]

PRETSCH AND PHOTO-GALVANOGRAPHY.

Sir,—Having been requested to supply information on the above subject, for insertion in the *Journal of the Photographic Society*, I wrote what follows; but as room was not found for it, and as I do not think a subject so intimately connected with the true history of a branch of the great art of photographic engraving should be dismissed in a foot note, I trust you will find my observations and facts a place in your journal. The following is what I wrote:—

I have for many years abstained from public allusion to the subject of my former relations with Mr. Paul Pretsch, the so-called inventor of the photo-galvanographic process. You have invited me to break silence. I have no desire to be drawn into controversy, but as I have no other object save the truth, I fear nothing. The turn of the discussion at the late meeting of the Photographic Society, when Mr. Courtenay brought forward his process—photo-galvanography *redivivus*—indicated that the President, Mr. Glaisher, and no doubt many others, have been resting in the following beliefs:—

1. That Mr. Pretsch was an inventor.

2. That presentable plates (and prints therefrom) could be produced by his patent process without the aid of highly-skilled graver or retouching work.

Both of these beliefs are the reverse of true. Mr. Pretsch was no inventor; and every result issued to the public as the genuine product of the process was extensively and expensively worked upon by extraneous skill. I speak, unfortunately, from a most intimate acquaintance with the man and his method. But for me photo-galvanography would have had neither being nor name. When every practical person of note who had come in contact with Pretsch and his process had abandoned both alike as impracticable, it occurred to me—I was then young, in a good position, and enthusiastic—that among other things it might be applied to calico printing. I succeeded in forming a private company, in which six others (afterwards reduced to five), besides Mr. Pretsch and myself, were equal shareholders. There was plenty of money at command. We took out patents in France, Belgium, Austria, and other parts of the continent, besides America.

I looked at first upon Pretsch as a genius and an original discoverer; but a disagreeable fact came to dispel my illusions. After I had given up my former good position and prospects, and had induced others to embark in the venture, I discovered that Mr. Fox Talbot had a prior patent, to which Pretsch's bore not merely a strong family likeness, but in which the essential principle of the Pretsch patent was the very thing which, by a strange oversight of Mr. Talbot's, the latter had given to the public, as it was not included in his claims. I refer to the relief pictures obtained after immersing the exposed bichromated film in water. This Mr. Talbot described as "eminently beautiful," and regretted that his subsequent process of etching obliged him to destroy it. Now, I should consider the man who conceived the idea of electrotyping that raised image, *and did it*, as worthy to rank next to Mr. Fox Talbot, though it might be a question whether, under the circumstances, a really valid patent could be secured. Was Pretsch that man? I say, certainly not, and for three reasons:—

1. Because we have only Mr. Pretsch's word for it. Now, I am sorry thus publicly to say that I learned long ago to consider *that* worth nothing; for, not to mention many other matters, when I read to Pretsch the extract from Mr. Talbot's description, in the appendix to Hunt's *Photography* (1854 or 1855, I think), he assured me, in the most solemn manner, so that I could state the same positively to my partners, "I never heard of it"—*ipsissima verba*.

2. Because I learned afterwards that Mr. Talbot's process had been the subject of considerable experiment in the Imperial Printing Office, Vienna, of which Councillor Auer was manager when Pretsch held a subordinate position there, and that the rough, experimental plates which Pretsch brought to this country as his productions were the results of failures in electrotyping at the Imperial Printing Office the raised image described by Mr. Talbot.

3. Because Pretsch, as was only too patent to every one connected with the practical working of our company, was found to be thoroughly incompetent either to take a photograph, to electrotype, or, *mirabile dictu!* to work his so-called process; although, from first to last, well nigh £10,000 was spent over it, and every opportunity was afforded him to do his best. As long as he could he led my partners into the belief that the plates were wilfully spoilt by our electrotyper, who was dismissed, unjustly, but without mending matters in the least.

How, then, it may be asked, was anything produced? I answer, that it was entirely owing to an invention of my own that we were able to produce an electrotype. The film was of that delicate nature that, for so fine a method of printing as by copperplate press, it was important the film should not be altered either by heat or moisture, still less by both combined. It was a hard nut to crack. If heat were used—as with wax, for instance—when the plate was moist, the image was injured by the melting of the tender parts. If the plate was dried, the wax stuck to it. After numerous experiments—my thought by day, my dream by night—I invented a moulding mixture which, suitably applied, enabled a copy to be taken from the dried plate. Foolishly, I neglected to patent this, believing I was in the hands of men of honour. I had in my heart of hearts no other object than the general welfare of the Company, and the advance of what I believed to be a new and valuable art. I also made several other improvements in the details of the process. The photo-galvanographic process was, however, from first to last worked by means of my "capital" improvement, which alone made it at all practicable *as a basis* for the engraver, if it was to be a competitor with steel engraving.

But here I come to the point on which, in spite of my remonstrances, the public were shamfully—I use the term deliberately—deceived. I found, unhappily too soon, that the beautiful and apparently magical starting out of the relief image was delusive when the result was tested at the copperplate press. The very nature of the process is adverse to obtaining fine results without considerable touching up, not only in the deep shadows, but, what is worst of all, in the half-tints and fine details—the very pride of photography. This last imperfection, in fact, broke the back of the Company. Steel-facing was then hardly, if at all known; so that the engraver's work was most expensive, and therefore I deprecated the line in which my partners, at Pretsch's instigation, sought to develop the infant process—high class, fine art engraving.

The process is now a thing of the past, and my only wonder is that men like Mr. Courtenay should waste not only their energies, but spend good money, in patenting what, from the specimens exhibited the other night, was photo-galvanography unmistakable, and by no means improved. I have been amused every now and then to see re-patented my old friend, photo-galvanography, with a lot of unnecessary jumble upon the original jumble, yclept Pretsch's process.

Before concluding, I may as well mention that I have seen it stated that Pretsch's patent included printing from the gelatine film as is now done by the Albert-type (or, rather, Tessie du Motay) process. This is quite a mistake. What we aimed at doing, but did not succeed with, was, by applying *quick heat*, to cause the raised image to sink and become hollow or intaglio. This was filled in with ink like a copper-plate, but the result was very poor and feeble. It was, nevertheles, included in the patent. Patentees, as a rule, are greedy people, and not always inventors.—I am, yours, &c., Duncan C. Dallas.

FARGIER'S CARBON PATENT.

Dear Sir,—It is seldom that an "answer to a correspondent" has much interest except to the querist himself; but, as carbon printing is now receiving very general attention, and your note upon Fargier's patent on page 130 seems to me hardly to do justice to his process, you may pardon a few remarks upon the subject.

On referring to Fargier's specification, we find—after describing the mode of operating on metal or glass plates as you have mentioned—the following "modification":—

"Take a sheet of paper, the thinnest possible . . and apply one or more coats of the gelatinous compound before described [which consisted of a solution of gelatine holding carbon in suspension, and containing bichromate of potash] . . Place it in the frame, not on the gelatinized, but on the opposite side. . . . A reversed picture is obtained on the surface of the paper, which becomes detached by washings in warm water. *The transparency of the paper may be increased by rubbing oil or grease into it.* . . ."

This patent is dated April 18, 1861; and it cannot fail to strike any one that the processes for printing through the paper—described by Mr. Swan in 1867, by Mr. Blair in his turpentine process, and by Mr. Pouncy in his recent patent—are wonderfully like the above.

It is worthy of note that Fargier *expressly disclaims* originality in the employment of gelatine, carbon, and bichromate of potash, whether applied to metal, to glass, or to paper, for all this had been proposed and patented by Poitevin in his patent of December 13, 1855. But what he *did* expressly claim was the method of "producing and *developing* the photographic image so as to obtain the *perfect gradation of tint*, which was exposure on *one* side of the gelatinous layer, and developing or washing away the unaltered compound from the *other*."

Apropos of his process upon glass or metal, he says, in his specification, that "instead of employing collodion, *a sheet of prepared paper* may be used." If he had equally applied this to his paper, coated with "one or more coats of the gelatinous solution before described," we should at once have had a perfect single transfer process, as readily workable as any now employed. But he evidently thought but little of it, as he speaks somewhat apologetically: "but the pictures are then reversed," he says.—I am, dear sir, yours very truly,

John A. Spencer.

7, *Gold Hawk Terrace, Shepherd's Bush, March 21st*, 1870.

[There are some slight misconceptions in the letter of our correspondent which we will point out. The method of printing *through* thin pigmented paper—described in Fargier's specification of April 1861—is simply the method which Mr. Blair had described in January 1859, two years previous to Fargier, Blair employing wax instead of the oil or grease suggested subsequently by Fargier. The processes in which paraffine, turpentine, &c., were employed—by Swan in 1867, and by Blair and Pouncy later—differ from this original method of Blair in the fact that they all aim at producing a temporary transparency, whilst neither to Blair, nor subsequently to Fargier, had this temporary idea occurred. Fargier disclaimed the idea that he had originated the use of gelatine, carbon, and bichromate; he should have disclaimed much more, as we have just shown. Our correspondent says he claimed the production of "perfect gradation of tint" by "exposure on *one* side of the gelatinous layer, and developing or washing away the unaltered compound from the other side." Fargier did make this claim, but without any ground, as it had years previously been suggested by the Abbe Laborde, distinctly explained by Burnett, and both explained and put into practice by Blair. The only real novelty in Fargier's process was his method of coating glass with sensitive pigmented gelatine, exposing the coated glass under a negative, and then covering it with collodion or paper before immersing it in warm water to develop. What he did *not* do, and which Swan did do—and, by doing, gave a workable character to carbon printing—was the production of a distinct tissue, so prepared that by following the instructions it could be exposed on one side and developed on the other. Our correspondent suggests that *if* Fargier had gone a step further he might have produced a good single transfer process. It has been well said there is much virtue in an "if;" but as Fargier did not do this, which would have been a step in the direction taken by Swan, it scarcely affects the question as to how far Fargier's process is now available. All that Fargier actually accomplished, or all that is described in his specification, is available to photographers now; but all steps in advance, however apparently trivial, if they form parts of subsequent patents, can only be adopted by photographers by permission of the patentees. We print Fargier's specification *in extenso* on another page, so that those interested may learn its precise scope and limits.—Ed.]

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Talk in the Studio.

Photography and Popularity.—Photography is becoming one of the most commonly recognized tests of popular interest in any person or thing, and the frequency with which a portrait is exhibited is regarded as the measure of the popularity or notoriety of the original. The French correspondent of a daily contemporary, speaking of the trial of Prince Napoleon for the homicide of Victor Noir, says:—"In Paris itself some feeble efforts were made by the keepers of photographic shops to rid themselves of the likenesses of the actors in the Auteuil drama by exhibiting their carte-de-visite in a fan-like bouquet in their windows, the Prince, Victor Noir, Rochefort, De Fonviello, Rochefort, and the whole *Marseillaise* crew; but I noticed that the groups of the present Ministers, those of eminent surgeons, and still more, that of Stella and her sisters of the *corps de ballet*, engrossed all the attention of the gaping idlers on the footpath outside."

Photographic Libels.—The correspondent of another journal, writing on the subject, is surely blundering or exaggerating. He says:—"Photographs of Victor Noir—scorbutic libels the most of them, for the boy was comely—are selling off at four sous each on standings in the public places. The speculative Mr. Wilson, of Aberdeen, has his name printed on the back of most of these atrocities." If by the "speculative Mr. Wilson, of Aberdeen," Mr. George Washington Wilson is meant, the terms "scorbutic libels" and "atrocities" are for the first time, we fancy, associated with his work.

Saving Waste.—It is somewhat amusing to find a journal like the *Athenæum* printing a statement like the following as something novel and wonderful:—"An example of the utilization of waste has lately been afforded by a firm of photographers at Wakefield. During the last three years they have carefully collected their defective pictures, clippings, sweepings, washings, &c., burning the former from time to time to ashes, and precipitating the latter by common salt. To every pound of residues thus obtained, half-a-pound each of carbonate of potash and soda crystal in powder was added, and the whole fluxed. Two bars of pure silver alloyed with a little gold were thus obtained, weighing together 170 ounces troy, which have realized £44 1s. 1d." Most photographers have for years past recovered the precious metals from their so-called waste, and, as our readers know, to an extent which dwindles the sum above-mentioned to a mere bagatelle. It has been ascertained that with care about two-thirds of the original amount of silver used may be recovered; and as Mr. England in a single year has used considerably upwards of 2,000 ounces of nitrate of silver, the value of the residues may easily be calculated.

A Judge's Opinion of Photographs.—In a recent action at the Manchester Assizes, some photographs were produced in Court to show the position of certain buildings which formed the ground of dispute. The judge (Mr. Justice Willes) said "he was of opinion that photographs were odious in matters of art; they were mere distortions, and were eminently unsatisfactory to decide matters of this kind." It is fortunate that every one does not share his opinion.

Property Babies.—Our readers will remember that in the course of a series of papers entitled "Masks and Faces," by "Protagoras," the use in studios of property babies was suggested as a means of ridding the photographer of many troubles and much trial of patience. According to the *Court Journal*, French photographers have adopted the idea. The Journal of the Society, on the authority of our fashionable contemporary, says that "maternal photographs are becoming so fashionable in Paris that many photographers in that city keep a baby as one of their accessories. From the dislike felt by most operators to undertake infant photography, the veracity of this statement is to be doubted, although in many instances it would be a great advantage, no doubt, to be able to substitute a trained model for the fractious ones photographers are not unfrequently troubled with."

Fallacious Proportions in Photography.—Dr. Vogel mentions the application of an old idea to give a false appearance of stature in a portrait. He says:—"A very diminutive lady called on Mr. Prumm here. She complained that on all the photographs which had been taken of her she looked so very small, and that photographers were very unskilful people. Mr. Prumm placed the little woman alongside a toy table, threw the drapery over it, took a plain background, and made the picture a three-quarter length, from the knees up. The effect was remarkable. Alongside the small table the lady looked quite large. She was delighted with her likeness, and declared that Mr. Prumm was the first photographer in the world."

Science and the Devil.—*Nature* states that Professor Uuger, of Vienna, a well-known botanist, has been found murdered in his bed at Graz; and no trace of the murderer has yet been discovered. A priest has taken this opportunity to assert from the pulpit at Cilly, Styria, that the body of the late philosopher had probably been destroyed by the devil himself, who had just claims upon his soul!

Designs in Metal.—The effect of coins, medals, and designs in metal may be admirably rendered by backing collodio-chloride or other transparencies with gold or silver foil, or by transferring the film to metallic papers.

Pyrogallic Acid as Poison.—From recent experiments it would appear that photographers have every day to deal with a compound which is not only as poisonous in its nature as cyanide of potassium, but likewise much more distressing to the sufferer. Pyrogallic acid, when taken internally, produces effects analogous to those of phosphorus, its action being comparatively slow and painful; sixty grains given to a dog caused death in two days, while thirty grains killed another animal in sixty hours. Oil of turpentine is stated by M. Personne to be an efficient antidote.—*Photographic Journal*

Artificial Caoutchouc.—M. Granier, in *Les Mondes*, says:—"This material is a mixture containing gelatine and a variety of other substances (not specified) producing a homogeneous elastic substance, insoluble in mineral, as well as vegetable essential oils; not acted upon, moreover, by either coal or other hydrogenized gases. This material is now employed in France for a variety of purposes, too many to be here enumerated; its cost is only three francs per kilo.; and it melts readily at 100°, without decomposition, and can be cast into different moulds. Neither cold nor heat affects this substance, which, when completely oxidized, becomes more fusible than vulcanized caoutchouc."

To Correspondents.

An Amateur.—As a rule, when alcohol is mentioned, without any qualification, ordinary methylated spirits may be used. When the use of pure alcohol or absolute alcohol is of importance, it is generally so specified.

G. Smith.—It is very probable that the lens you describe will produce fairly good card pictures; but it is almost imperative that you should have it fitted with diaphragms.

N. S.—The formula was printed as stated by the writer. The acetate of soda we understand as having been added to the collodion.

J. T.—In the formula you name it is clear that four drachms of acetic acid are intended, not four ounces. 2. We regret that we have no such examples. Write to Messrs. Robinson and Cherrill, of Tunbridge Wells; they can probably supply you.

Enquirer.—The ordinary solution of pyro and citric acid with silver is intended. Hyposulphite is used for fixing. 2. You can try the carbon process for experiment without a licence. The Autotype Company will supply the tissue.

Alpha.—We believe that Mr. Solomon sells such a varnish. 2. The use of a pyrogallic acid developer with acetic acid tends to the production of warm tones. Try one grain pyro, thirty minims acetic acid, and water one ounce, and give a full exposure.

Photo. Ane.—Equal parts of sulphuric acid and water and a few seconds' immersion will answer well for parchmentizing paper. If the acid is more dilute, the parchmentizing action is not quite so complete.

Venator.—When you state that you have followed the instructions given in various articles, and failed, you make it somewhat difficult to assist you; because as each article may give a slightly different recipe, which, worked out carefully in its entirety, will certainly succeed, it is impossible to point a general cause of failure which may apply equally to all. There are different formulæ for producing enlargements on collodion, and various modes of transferring; but we do not know which you have tried. Be so good as to describe exactly the formula and operations by which you have failed to get perfect results, and then we may be able to suggest where your error lies. A veiled, foggy, and sunken-looking image is very frequently due to under-exposure and prolonged development with a developer containing too little acid. Bear in mind, also, that a good image often looks a little dull and sunken until it is varnished. Ordinary printing negatives require long exposure and rapid development when employed for camera printing. 2. Carbon printing has not been adopted extensively for portraiture as yet. We believe it is the intention of the Autotype Company to show the operations at their new premises, and that they will permit photographers to experiment prior to taking a licence. The Company will give you the proper information on these points. 3. The copies of engravings you enclose—"Adam and Eve in Paradise," and the "Expulsion from Paradise"—would not come within the class of indecent photographs.

Captain Turton.—There are many excellent qualities and much artistic feeling in the examples received, especially when considered in relation to the amount of experience. Those on the Durand paper are decidedly best. We do not object to the soft diffused definition in large heads of this kind. They are returned by post. 2. The case of silver and carbon printing is not easy to decide absolutely. With equal facilities for the practice of both, we should choose carbon for our own operations. It will be wise, some time when you are in town, to see carbon operations at the establishment of the Autotype Company. 3. An enlarging camera will answer also for copying direct.

J. H. (A Subscriber from the First).—There is no law that we know of to prevent you taking a view of any building and selling it. The architect has no copyright in the design of his church. As, however, you took the views, not for yourself, but for a customer, you have no copyright in them. Nevertheless, the negatives are yours, and whilst you cannot properly sell prints without the permission of the person who gave you the commission, neither can he demand the negatives unless you choose to sell them to him. Any views of the church which you take yourself you can sell without the permission of anyone.

J. Girault.—The *Photographisches Correspondenz* is published in Vienna, No. 7, Carmelitergasse, Leopoldstadt. We do not know of any place else where it can be obtained, nor whether single numbers are supplied.

Notman and Frazer.—Received. Thanks. Notice shortly.

Received: "The Dance of Death," and "Bible Figures," issued by the Holbein Society.

Several Correspondents in our next.

Photographs Registered.

Francis Elwell, M.A., Weston-super-Mare,
Photograph of Weston-super-Mare Sanatorium.
Mr. J. Wakeham, Stonehouse,
Photograph of Oil Painting of the Bermuda Dock, &c., by Gibons, of Plymouth.
Mr. J. Lancaster, Chester,
Photograph of the Opening of the New Town Hall, Chester.
Mr. Lee, Cardiff,
Four Photographs of Edward Whiffen, Esq., Mayor of Cardiff.
Mr. J. Eaton, Micklehurst,
Photograph of Rev. G. Minster.
Mr. A. Beattie, Preston,
Photograph of a Group of Portraits of E. Hermon, Esq., M.P.
Mr. Hulland, Tamworth,
Photograph of J. Bradbury, Esq.
Mr. A. Winterbon, Southampton,
Photograph of late Mr. Edwards.
Mr. Martin, Burton-on-Trent,
Photograph of Mrs. Ketley's Four Children

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THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 604.—*April* 1, 1870.

CONTENTS.

	PAGE
Negatives on Ground Glass	145
New Mounting Material to Prevent Cockling	145
Echoes of the Month. By An Old Photographer	146
American Correspondence	148
Gleanings from Daily Work. By Stella Polaris	150
Green Glass for Dark Rooms. By J. Martin	150
Patents—British and French	151
Note on the Action of Iodine on Hyposulphite. By C. R. A. Wright, B.SC., F.C.S.	152
Correspondence.—Silver Printing *versus* Carbon—Collodio-Chloride Paper	153
Talk in the Studio	155
To Correspondents	156

NEGATIVES ON GROUND GLASS.

We have been favoured by our esteemed *collaborateur* Mr. Wilson, of Philadelphia, with some further examples of what is termed in America the "Berlin process," and also a negative which Mr. Rowell, the inventor of the process, courteously sent us. The prints so unquestionably possess a pleasing effect peculiarly their own—the recently received examples even more than former ones—that we are induced to add a few more remarks on the subject. Unfortunately the negative was shivered into a score of pieces during carriage; but, putting the portions together as well as we were able, we obtained a print possessing the characteristic softness to which we have before referred. The back of the negative was ground moderately fine, possessing a texture very similar to that commonly used in the focussing-screens of cameras.

The fact mentioned by Mr. Wilson, in his letter on another page, that the negatives need not be so intense when produced on ground glass as when taken on clear glass, is certainly illustrated by the negative sent, which prints with great vigour, although to the eye an exceedingly soft negative. That the effect is pleasing is evidenced by the fact our correspondent mentions, namely, that an eminent photographer in Philadelphia paid Mr. Rowell's agent $250 (about £50 sterling) for the sole right—or, more probably, we presume, the sole possession of the secret—of working in that city. An able photographer, writing to us, mentions a very feasible argument against the process. He states the very obvious fact that the intention of stippling in painting is not to give a grain, as that, in itself, would give a meally effect to the picture, but to secure roundness and modelling by the direction of the dots, following the form of the muscles of the face. This remark is, in a given degree, undoubtedly true, but it is not all the truth. Stippling does this undoubtedly, but it does something more: it gives a degree of transparency and luminousness not to be attained by the simple application of a flat tint. This might easily be illustrated by a reference to work in colour; but, in dealing with monochrome, we may simply mention one form of illustration with which every observant photographer must be familiar. If a photograph from life and an engraving of the same subject be compared which, when examined close at hand, each appear to possess the same depth or force, it will be found that the same picture, when removed a little further from the eye, possesses a different effect: the photograph will look heavier and duller than the engraving, the stipple in which lets light into the shadows, and gives a higher and more luminous effect, without loss of depth, than the photograph, in which the gradation consists of continuous or flat tints. In some degree a similar transparency is possessed by a drawing on a roughly-grained drawing-paper, very much higher finish being necessary to secure an effect equally vigorous, atmospheric, and luminous on a smooth drawing-board.

But it seems to us that it is not improbable that another cause is in operation here to which some of the softness of the prints is due. The effect in a negative taken on glass the back of which is ground, is decidedly more marked than the effect produced by printing through ground glass with the roughed side of the glass in contact with the negative, and, so far as the mere effect on the printing is concerned, there can be no reason for this difference; some other cause must, therefore, be sought. The possibility which occurs to our mind to account for this fact is the reflection of the light passing through the film back from the thousands of fine facets presented by the ground surface at the back of the plate, and these reflections, being infinitely varied in their direction by the varied angles of these minute reflecting surfaces, will tend to give the soft effect similar to diffusion of focus, in which freckles, pock-marks, and rugosities are softend and diffused as the painter softens and blends his tints by a gentle touch of a badger hair tool. If this conjecture be correct, it is necessary to take the negative on glass roughened at the back, and not merely to print through such a roughened surface.

Apart from speculation on the subject, however, we return to the fact that the prints sent to us from America, printed from such negatives, really possess pleasing qualities, easily secured, and well worth attention. For large heads, especially with a large portion of the face in half shadow, the treatment appears to be most effective. We shall have pleasure in learning the experience of any of our experimental readers who may try this mode of working.

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NEW MOUNTING MATERIAL TO PREVENT COCKLING.

One of the serious incidental troubles which beset photographers is the difficulty of mounting albuminized prints on thin cards or on plate paper without causing unsightly cockling of the margin. For the portfolio or framing, the mounting-board may be sufficiently stout to obviate this difficulty; but where photographs are used for book illustration, the use of extremely thin boards, or even of a stout paper, for mounting purposes is imperative. The only mounting material hitherto in use by which all risk of cockling is avoided is india-rubber in solution. Nothing can be neater or more free from tendency to curl or cockle than prints mounted with this material, but, unfortunately, it is altogether untrustworthy: sooner or later the prints are sure to leave the mounts. We have a parcel of fine large photographs before us at this moment, which we received a little less than a year ago. They were admirably mounted with india-rubber, and looked unusually flat and neat. Now more than three-fourths of them are hanging loose or curled up from the mounting-board. They are but examples of many scores we have seen. Dr. Diamond, as we have before mentioned some time ago, showed us an album containing prints which had been mounted with india-rubber about ten or twelve years ago: all the prints were loose, and some very much discoloured. The india-rubber had changed from an elastic gum into a brown friable resin, a powdery layer of which remained where the print had been; and, in some cases, where the solution had been used more than enough to penetrate the paper at the back of the print, the picture was ruined by the brown stains caused by the change in the india-rubber. Our experience and observation have compelled us, therefore, to condemn india-rubber as a mounting material.

Professional mounters generally use glue; and, when skilfully managed—the glue being used with as little water as possible—it answers exceedingly well, and but very slight cockling is produced. But if very little water be used it is necessary to keep the glue at a high temperature, so as to secure a workable fluidity by means of heat instead of water; and hence, except in the hands of those constantly engaged in the work, it is attended with some inconvenience.

The cause of cockling in prints mounted on thin boards is, of course, well known. A print treated with starch, paste, gum, or any adhesive preparation of which water forms a large part, absorbs the water and swells and stretches. If, in this condition, it is attached to a dry board, it contracts in drying, causing cockling or buckling. The point to be secured, then, is an adhesive substance containing little or no water. India-rubber solution answers this condition; but, as we have shown, it fails in other respects. We are about to describe another preparation which also answers this condition, without the disadvantages of india-rubber.

It consists of a solution of gelatine or glue in alcohol. This, at first sight, seems to be an impossibility, since, under ordinary circumstances, gelatine is not soluble in alcohol, but it is, on the contrary, precipitated from an aqueous solution by the addition of alcohol. After various experiments we have succeeded, however, in preparing the solution satisfactorily. Take half an ounce of gelatine and cover it with water; leave it in soak for (say) twenty-four hours, in which time it will become thoroughly swollen; now pour off all the superfluous water except two or three drachms; place the gelatine, with this trace of water, in a glue pot, and place it on the fire; when it is melted add six ounces of alcohol (that used in our experiments had a specific gravity of 820). A most important point, however, is the mode of mixture. The alcohol must be added a little at a time, stirring steadily with a glass rod, and maintaining a moderately high temperature. By proceeding carefully in this way perfect mixture is secured, and the solution is then poured into a wide-mouthed bottle, corked and stoppered, and set aside for use. It is well to rub a little of a solution of wax or paraffine round the stopper to prevent it becoming fixed by the gelatine in the bottle. When cool the solution is slightly gelatinized, but a very slight degree of warmth makes it fluid for use. This applied to the print causes a scarcely appreciable degree of expansion, and no appreciable subsequent cockling. Its adhesive qualities are perfect, and the preparation keeps well.

To prevent the rigid hardness which characterized good gelatine, we added from one to two drachms of glycerine to the preparation, which is, we think, an improvement. It is probable that any good samples of glue would answer the purpose, and for extensive use would, of course, be more economical. At first sight the use of alcohol for mounting purposes seems costly, but as a little of the preparation will mount many prints, the expense need not be very serious.

We understand that some preparations for mounting without cockling are in the market, but, as we have not seen them, we cannot tell how far they may resemble that just described. We understand, however, that these commercial preparations answer the purpose well.

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ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Eclipse Photographs at Home and Abroad—Photographs of Prisoners—Female Labour in Photography—Dummy Babies—Combination Negatives—Exhibiting Portraits of Defaulting Sitters—Paul Pretsch and Photo-engraving—Photographs in Natural Colours—Mr. Stillman's Theory of Development—Societies.

The record of the recent photographic successes in America in connection with the solar eclipse of last August seems to have recalled in some quarters the memory of the inglorious photographic failure of the English eclipse expedition in 1868. An able essayist, writing in the *South London Press* under the *nom de plume* of "Rupert," has a trenchant article on the subject as a branch of the great art of "How-not-to-do it," in which English Government departments have attained a high proficiency. He asks the question:—

> What has become of the photographs of the eclipse of the sun, taken by the expedition sent out to India for the purpose in 1868? I ask the question because that eclipse was so important, inasmuch as it could not repeat itself for thousands of years, that the Government voted a special sum for the expedition—a sum sufficient to send out a little army of observation to India—and *no one has seen anything of the results!* It is believed that the photographic part of the business was an utter and humiliating failure; that the opportunity was lost, the money wasted, and that the photographs will never be forthcoming.

Your readers doubtless remember the mortifying failure recorded in the Photographic News at the time arising from causes which should have been prevented. Whether the hope then expressed that "something" might possibly be made of them has been fulfilled, and whether with the aid of "doctoring" they have been found to possess any astronomical value, I have never heard. Certain it is that a fine contrast is furnished by the admirable arrangements and success of the American expedition, and it may be interesting to your readers to know how it strikes an outside looker-on like "Rupert." After referring to the well-managed German expedition sent to Aden in 1868, he says:—

> But not only is Germany able to succeed in these matters. America also distinguished itself in like manner over the eclipse of last year. The work was placed in the hands of Professor Henry Morton, who did not content himself with getting a few soldiers to help him in carrying it out, but placed himself in communication with the leading photographers of his own country, of England, and elsewhere. Photography having been thus duly honoured, repaid the tribute with perfect results. The photographs of that eclipse are among the triumphs of the art, and are simply invaluable. And, having got them, what does Professor Morton do? Does he lock them up, or destroy them—one or the other—as Major Tennant has done? No; they are published in a volume which is a credit to his country, and not confined to that country, but placed in the hands of scientific men in other lands. While the work was in progress, facts and diagrams were forwarded to the leading photographic journal of England (the News), and the complete work has now been sent over to it with the compliments of the Government of the United States! When shall we be able to return that compliment with our Indian photographs? And would we do so if we were in a position?

Speaking of fatal tailure which so often attends Government projects, I am tempted to ask, will a similar miscarriage await the plan of securing photographic portraits of regular gaol birds which is contemplated in the recently passed Habitual Criminals Act? Hitherto, in its partial and permissive application, it has been found very valuable as a means of identifying criminals on a second capture, and the only wonder has been that it did not become the rule instead of the exception years ago. But now that Government has adopted the idea, and ordered its universal application, it seems natural to speculate as to where the hitch will occur. There is undoubtedly room for failure. A little cheese-paring or a little nepotism may effect much in securing non-success. Good apparatus and skilful photographers are imperative conditions in securing good results. A bad photograph will be found a small aid to identification, and will do more harm than good if it be relied on. It is, perhaps, not necessary that the portrait should meet the cordial approbation of Mr. Sykes himself, nor of his friends Fagin, Charley Bates, or the Artful Dodger; but a good characteristic portrait is necessary to identification. The sitter should also be taken "in his habit as he lived" before he donned the prison uniform. As the rogue will generally regard this system of identification as taking a mean advantage of him, he may be expected naturally enough to be fertile in resource in rendering its production as difficult, and the result as little efficient, as possible, the photographer should be a man of equal resource in order to secure trustworthy portraits. Will the Government secure such men?

The late Frederic Guest Tomlins—one of the most accomplished, brilliant, and genial of journalists—observed on one occasion that he believed it possible to provide a quotation from Shakespeare appropriate to any subject under the sun; and when asked if he could cite a passage in any way applicable to the treadmill, at once responded with a passage from Lear:

"Down, thou climbing sorrow!"

It might have appeared almost as unlikely that lines bearing apparent reference to the contemplated system of criminal portraiture would be found. Singularly enough, however, the same play provides a quotation not less apt than that just mentioned:

"———The villain shall not 'scape;
. . . . His picture
I will send far and near, that all the kingdom
May have due note of him."

I note that the employment of female labour in photography is mooted again by a correspondent in these pages. There are, perhaps, few industries better suited to the power of women than photography, and few in which they are more generally employed—at least, in such branches as they have been found, on trial, to succeed. Most of the duties require taste and skill rather than strength, and might be supposed to be pre-eminently fitted to the feminine capacity. In mounting, tinting, and retouching it is certain that they succeed; and in these duties they are almost universally employed. In more responsible duties—such as printing or operating, in which care, knowledge, and judgment are required—the success has been much more qualified. It is true that amongst the ranks of distinguished amateurs two or three ladies have taken high position, and there are a few instances of women succeeding professionally as operators or printers; but these are exceptional instances, simply proving that clever women may excel in any occupation not requiring great physical strength. I have heard of cases in which female labour in printing has been tried and abandoned. The reasons alleged have been that there is a general lack of care and precision, a singular want of uniformity in the results, involving the necessity of condemning as waste much of the work produced. It is alleged that it is very difficult to induce girls or women to feel the necessity of working with precision to a certain even standard of excellence. Either from non-perception of the importance of uniform excellence, lack of judgment to distinguish between perfect and imperfect results, or want of the necessary care to produce them, women have not succeeded as printers. I fear that the cause once pointed out by the Editor of this Journal must always, in greater or less degree, militate against the success of female labour in any industry requiring the skill which can only be attained by close application and experience. A girl rarely regards any industrial occupation upon which she enters as her business for life. Marriage, as a rule, is her final aim; and any employment upon which she enters is regarded as a means of subsistence for a few years only. A lad when he enters a trade or profession regards it as the business of his life, and proficiency in it as the only means of success, or even of living, for the rest of his days. He has the strongest possible motive, therefore, for acquiring a reasonable proficiency in an occupation upon which his whole future must depend. If it be granted that natural capacity in each sex is equal, the motives for steady application are so disproportionate that all the chances must be in favour of man's greater success. Your correspondent suggests that the employment of female operators would, of necessity, be agreeable to ladies. This I much doubt. Women, as a rule, have more confidence in the ability of men than they have in the ability of their own sex; and it is very doubtful indeed whether they would meet with the same patient consideration and attention which they receive and expect from male operators.

Is it true, or merely a *canard*, that the French photographers have introduced property babies into their studios, to do duty instead of the squalling, kicking little darlings which so often destroy the tempers of the most amiable of operators? What a charm there would be in the inevitable name of such lay figures—baby "dummies!" I remember hearing it stated, on good authority, that the portrait of a baby which was published some time ago in conjunction with the Princess of Wales was not a royal baby at all. Infant royalty had rebelled, and spoiled a good negative in which the Princess was perfect; and when the Prince of Wales was informed that baby had moved and that another sitting would be necessary, he replied, "Oh, put some other baby into the picture; all babies of that age are alike!" "Sensible man!" many of my male readers will exclaim. "Unnatural father!" will be the response of as many ladies as read the Photographic News. However, if ever the property baby becomes generally adopted, the credit should be duly accorded to "Brown," the friend of "Protagoras," who not only suggested the idea, but elaborately worked it out, and described the laughing, crying, and serious-minded samples made of india-rubber, gutta-percha, or other plastic and flexible material. If any enterprising manufacturer should be disposed to take up the idea, I would refer him to your last volume for hints in producing the "photographic anti-moving, never-howling model baby."

I have seen some prints from the combination negatives of Mr. Johnston, of Wick, whose pamphlet I have also seen. The method is doubtless very ingenious: it will require care and skill to employ it with perfect success, which is a fortunate circumstance; but I cannot help thinking that, as for many pictorial effects in photography combined operations are necessary, it is desirable, if possible, to secure that combination in the negative, rather than in the printing of every individual proof produced.

Is a photographer justified in exhibiting as a defaulter the photograph of a sitter who has neglected to pay for his portrait? I have heard of more than one such case lately; but I strongly suspect that such a course may subject the perpetrator to the law of libel, and that justification in fact would not be admitted as a good plea. The provocation may be readily admitted; but in pursuing such a course the creditor is taking the law into his own hands, almost as much as if he were to punch the defaulter's head. Such an exhibition of a portrait displays an intention to punish the debtor, as much as to compel him to pay, and partakes of the character of the "wild justice" of revenge, which is illegal in this country. The idea has, however, the sanction of antiquity. It is an old story which relates how a certain somewhat ill-favoured nobleman, dissatisfied with his portrait done by a great painter, declined to pay for it. "As your lordship pleases," replied the painter; "it will be no loss to me." "How, no loss to you? Upon whom, then, will the loss fall?" returned the sitter, astounded at the painter's ready acquiescence. "Upon no one, my lord; I shall simply add a tail to the figure, and it will make an excellent monkey, the painting of which will readily sell for more than the price of the portrait." In this case the portrait was at once paid for; but I fear that I cannot recommend the experiment for repetition by photographers.

Poor Paul Pretsch! He has had a terrible battery opened upon him by Mr. Dallas. If the statements made be true, it would seem that he was an untruthful, incompetent charlatan. Now I do not think he was this. An unpractical, crotchety man, possibly, with a tendency to over-rate his achievements. But if this were crime, what inventor is not a criminal? I believe that he over-rated his processes in words, simply because in all earnestness he over-rated them in thought. He was certainly an unfortunate man, and he is not on the spot to defend himself. The French proverb says that the absent are always wrong. But I cannot help thinking that Mr. Glaisher was altogether right, both in spirit and in fact, in asserting at the recent meeting of the Photographic Society that some of Paul Pretsch's engravings were sent out untouched. If I am not mistaken, several of his photo-surface printing-blocks, which have undergone the ordeal of machine printing with ordinary type in journals, have been vouched by the editors through whose hands they have passed to be untouched, and in quality they were very like many of those exhibited by Mr. Courtenay, and were certainly not inferior.

The discussion which arose at the meeting of the Parent Society on the possibility of producing photographs in colours was very amusing. For myself I must confess I can see no way of escape from the position of Mr. Stillman, and endorsed by the President, that as colour is a product of light proper, and as photography is simply the product of the sun's chemical action, and that product is simply a metal reduced from its salts, there is no ground whatever in any of the operations for even a remote hope of the production of colour. I believe that the indications of colour hitherto produced are due to the different amounts of reduction due to the varying intensities of the actinic operation to which they have been subject. It was very refreshing, however, to see a venerable *savant* like the Rev. J. B. Reade professing his profound belief in the possibility of producing colour, and referring to the accidental coincidences of tint occasionally seen in negatives as proof positive of that possibility. As I have seen all the examples, I believe, to which he referred, I can express my unhesitating conviction that in every instance the indication of colour was simply the variations and tints of blue, red, and drab occasionally seen in a fine pyrogallic acid developed negative, and that their approximate coincidence with colours in the original was due to the varying degrees of intensity in the light. Mr. Stillman's paper on the theory of development was ingenious and interesting, and seemed to meet with general acquiescence. I notice that since a writer in a contemporary journal takes exception to it on the ground that no latent decomposition of iodide of silver is produced by light, as he states can be readily proved by the fact that the image is not formed of the silver abstracted from the iodide, but entirely of the silver in the reducing agent. This gentleman seems to overlook the recorded fact that an image can be developed on a film of washed iodide of silver with a developer from which all trace of silver has been carefully eliminated.

At the South London meeting Mr. Johnson's capital History and Description of the Progress of Carbon Printing was read, and its interest greatly increased by a practical demonstration.

At the Bristol Society a comprehensive paper and animated discussion on Photography in Tropical Conditions occupied the meeting, which derived interest from its relation to the occasional summer condition of this country.

At Oldham, Mr. Beverley seems to have somewhat thoughtlessly condemned a writer for publishing what he, Mr. Beverley, considered immature experiments, the condemnation being based on experiments manifestly still more immature. Probably the paper was intended less as a criticism upon the article referred to, than as a means of initiating a discussion on accelerators in collodion, a subject full of interest, and which has not received much attention for some years past.

The Liverpool Society maintains the spirit of emulation amongst its members by the distribution of prizes for various forms of excellence. A print sent by Messrs. Robinson and Cherrill was announced as a prize for the best instantaneous picture, or, failing that, for the best year's work, the decision to be made, of course, at the end of the year.

I do not remark anything of especial note at other meetings.

AMERICAN CORRESPONDENCE.

Gas Explosions—Bromo-Iodide of Silver and Ammonium in Collodion—Photography and Electro-Physiognomy—Important Patent Case Decided—The Berlin Process.

Gas Explosions.—We have had two very unfortunate gas explosions here recently, which have caused quite a panic among those who are accustomed to working the magic lantern with the oxyhydrogen light. The first of the explosions occurred in a church near Boston, when Mr. J. A. Black, the eminent photographer, and his assistant, Mr. J. L. Dunmore (whose experience in photographing among the icebergs was recently recorded in the News) were about to give a lantern exhibition. The lantern and its appurtenances were in the organ-loft, Mr. Black being at the lantern and Mr. Dunmore at the gas-bags when the explosion occurred. Mr. Dunmore was thrown into the air some ten feet; Mr. Black was thrown down and completely stunned; and the organist had a splinter driven up his nostril and out at the side of the nose. The organ was very badly damaged, and nearly all the glass in the church windows was shattered. Mr. Dunmore was found to be very badly burned about the face and eyes, and it was feared at first that he would lose his sight; but Mr. Black, though badly stunned and deafened himself, applied restoratives to Mr. Dunmore's wounds, and at this writing the poor sufferer is much better. No satisfactory explanation can be given as to the cause of the explosion: everything seemed to be right as usual; the operators were experienced, and the explosion is yet a mysterious subject for theorizing. An old lady in the congregation, whose ancestors were probably Revolutionists, expressed *her* theory very freely. She thought it was a signal gun, to notify the assemblage that the performance was about to commence.

The second explosion occurred in the Horticultural Hall of this city, while Mr. O. H. Willard was giving a lantern exhibition to the news boys. It occurred during the intermission, and although the gas-bags both exploded, and the windows were all driven out, no one happened, fortunately, to be seriously hurt, except one man, whose whiskers were singed off quite clean.

This explosion was the result of gross carelessness. From some misunderstanding at the outset, the operator was under a false impression as to which gas-bag contained oxygen, and which hydrogen. This is proved by the actual position of the connecting tubes after the explosion. As a result of this, when filling up the bags from reservoirs during an intermission, though many precautions were taken to avoid just this mistake, the wrong gas was added to each bag, thus forming an explosive mixture in both. On attempting to relight the jets the explosion occurred. Had some distinguishing mark been put upon one of the bags, the accident might have been prevented; and it is hoped that others will take warning, and be more careful.

Bromo-Iodide of Silver and Ammonium in Collodion.—The advantages of holding on to a good thing when you get it have recently been illustrated Mr. E. L. Allen, one of our most skilful Boston photographers. His work has excited a good deal of admiration among his *confrères* recently; and, upon being asked for his formula, he declared he had "nothing new." He had, for example, made his collodion after one formula since 1861 as follows:—

Two solutions are made.

No. 1.

Dissolve 400 grains of nitrate of silver in 16 ounces of water, in a quart bottle. In another bottle dissolve 320 grains of iodide of ammonium in 1 pint of water, and add to the silver solution; wash the precipitate two or three times with water, after in 95 per cent. alcohol; shake well, settle, and pour off.

No. 2.

Dissolve 320 grains of bromide of ammonium in 16 ounces of 95 per cent. alcohol; when dissolved, add 800 grains of iodide of ammonium; and then, when it is dissolved, add the mixture to bottle No. 1; shake for half-an-hour; this is a saturated solution of bromo-iodide of silver and ammonium; to excite, add 1 ounce of bromo-iodide of silver and ammonium to 8 ounces of plain collodion, and it is ready for use.

Mr. Allen finds, in the use of this old formula, that he secures increased sensitiveness, an admirable colour of negative, of fine printing qualities, and great ease and certainty in working. Moreover, he has less loss of collodion by spoiling on his hands.

How few there are, though, who, when they have found a formula that gives satisfaction, will adhere to it! How few there are, too, who will accept a formula and have the honesty to work it right through without any innovation of their own! I constantly see parties who are ever clamourous after "good formulæ for collodion;" "something reliable for a developer;" or "a certain toning solution," &c. Give it to them, and they go home and try—not it, but *a modification of their own*—and *fail*. They then come back to you, affirming that your formula is "not reliable," and ask for "*your own*—the one *you* work yourself." You question them, and finally twist it out of them that they have not followed your directions at all; for this reason, some men never can and never will make good work. They are too self-opinionated to follow advice, and to them good counsel is "pearls before swine."

Photography and Electro-Physiognomy.—Photography has been made to do admirable service to the cause of science recently by M. Duchenne, a distinguished electrician of Bologne. It is well known that the muscles of the face are not, like those of our limbs, all completely subject to the will, although they spontaneously and involuntarily contract under the influence of emotions, and express them physiognomically by the lines and folds, the tensions or distensions, of the skin which rounds our features.

All the expressions of which the face is susceptible, through the contraction of its muscles, may be imitated by their contractions as induced by the electric current. M. Duchenne illustrates this fact by a large series of photographs, copies of which are before me, which have been made of the faces of his patients at the moment when a certain muscle or muscles, in contracting under the rheophores of an electro-magnet, give a characteristic expression of the countenance. The effects are wonderful and curious, and, were it not for our ever useful art, none but eye-witnesses could see or understand them. Here are faces expressing joy, sorrow, glee, sadness, compassion, malignity, benevolence, weeping, pain, hope, cruelty, ferocity, &c. &c, all caused by the touch of rheophore. In some cases we have contrary expressions on the same face: *i. e.*. the patient is told to *look* sad; this done, the muscles which produce an expression of glee are gently touched with the rheophore on one side of the face, and we have a double expression. An old, stolid face is made to look as delighted as a child over a new doll; and a gentle, amiable woman as savage and cruel as Lady Macbeth when about to murder King Duncan; then they are photographed, and thus we are enabled to study them.

Important Patent Case Decided.—Another important photographic patent case has recently been decided in the United States District Court at Baltimore; *i. e.*, the so-called "Solar Camera Case." It was an action by G. M. Woodward against Mr. Dinmore, the latter using one of Shive's instruments. The suit was commenced about four years ago, and the decision has been looked forward to with a great deal of interest. Much testimony was taken, and long arguments made, the hearing lasting nearly a week. Pending the grand *finale*, both sides cautioned the poor photographer against infringing their patents, both claiming that "the decision would soon be in their favour," and then "*all* infringers would be prosecuted to the full extent of the law." This caused considerable demoralization among photographers, some declaring they would erect such a camera as they thought best, and others being afraid to put up one at all. The decision is given at last, and the decree of the court is against Shive's patent. This was anticipated, and, as his representatives were to be the great annihilators, it is gratifying to the fraternity to know that they have escaped a dreadful retribution. Here is another instance of the folly of a party who has a patent trying to gobble up with it everything else ever heard of that produces similar results to his own, and another downfall of a patent is the *finale*.

The Berlin Process.—I am now able to give you more particulars concerning the so-called "Berlin process," or the method of making negatives on ground glass. As I wrote you a few weeks ago, Mr. Frank Rowell, Boston, was the first to use the method here, and practised it secretly a year or two before he was found out. An enterprizing little photographer then took hold, and travelled around the country selling the secret. An eminent photographer of this city thought he saw so much in it that it was too good a thing to allow his neighbours to have, and therefore negotiated for "the sole right to use in this city," and paid $250 for the privilege. As the process, or idea, was not patented, the folly of gobbling up such things is apparent, though anxiety lest some one else should possess the great secret had something to do with this case, doubtless. I have recently paid a visit to Mr. Rowell's studio, saw him make negatives, received one from him for you, which I send herewith, and learned all there was to be learned of the manipulation.

As I have before stated, the negative is made on glass ground on one side, the film being on the smooth side. The glass is ground rather fine, though the larger the image desired, the coarser should the glass be ground. And when the glass is ground coarse, the *stippled* effect is more apparent, instead of a softer and mezzotint like effect. The plates are albuminized before coating in the usual way, and, as the albumen is apt to run down in streaks on the ground side, such streaks must be cleaned off immediately after the plate is fixed and washed (while wet, of course). This is done by rubbing a cork dipped in emery powder over the ground surface until the stains are removed. The negative is not required to be intense. For example, a negative on plain glass that you would strengthen, need not be strengthened on the ground glass. The printing is done in the usual way, except when it is desirable to increase the stippled effect; then the light is caused to fall directly upon the negative from above only, by shielding the sides with a wooden box without a bottom—*i. e.*, by shutting off from the negative all light but that from above. The effect, you see, is beautiful when the subject is artistically lighted. All rugosities of the skin, freckles, &c., are subdued by it; and it is a new power in the hands of the skilful photographer.

Mr. Rowell has, probably, worked the carbon process more extensively in this country than anyone else. He has tried Mr. Johnson's new process, and speaks very highly of its advantages.

Since writing the above I have had an interview with Mr. Black, and he thinks he can account for his explosion. I will learn further, and report concerning it in my next.

Truly yours, Edward L. Wilson.

GLEANINGS FROM DAILY WORK.

BY STELLA POLARIS.

On the Manipulations of the Magnesium Enlarging Camera.

To have enlarged views of all human affairs is good, and to have enlarged views of human heads is profitable, when they can be produced cheaply and sold dearly. This is easily done now, so much so, that the horrid old fear comes over one, when thinking, writing, or speaking of it, namely, a thing so easy and cheap is always liable to be spoiled by falling into incompetent hands, who, unable to keep up the price by putting good *ideas* into their work, will make the process both cheap and nasty by working it solely as a manufacture.

There is no really good process which is not cheap in itself, and in every art the money should go to the thought, and not to the execution. This is seen in literature better than in anything else I know of: for the few words I am now stringing together, my honoured friend the Editor will some day send me a little remittance; but the very same words, or others no longer, nor more difficult to spell, put together by Mr. Alfred Tennyson, would probably be worth as many guineas as I may receive farthings. Yet the *process* of conveying to the public the thought involved is exactly the same in each case: first a written copy, then a printed proof corrected by the author; this is not an expensive process, but thinking costs money.

Let us apply this to our camera. Suppose I have a portrait of a gentleman, and I suppose I see my way to produce an enlargement which shall be a great success in all respects, so much so that, on coming into the room, all his friends hold up their hands in astonishment, saying, "Oh, what a splendid portrait! what a speaking likeness!" I sell him the picture for three guineas, and it cost, say, fifteen shillings, frame and all; well, I think the remainder of the charge is for the *thought*, and the proof of the pudding is in the eating. The public believe in the value of the thought, because it appreciates the success, and readily pays its money to gain possession of the coveted picture. So, then, the moral of this is, do an enlargement if you see your way to making a successful picture, but do not sell it for one-third more than it cost to do—cost, I mean for time actually spent, and material; but consider that your skill, and the treatment you have given the subject, is worth something, so do not forget to charge for that too.

Now, practically. To do enlargements thoroughly well two things are needed: first, a perfect negative; second, a perfect process. I shall say nothing about the negative; it is not at present my business. There is only one condition I should mention, namely, to gain the best result, the negative should be *thin*. A dense negative not only takes much longer to print, but, also, the result is nearly sure to be crude and hard when done.

Now for the process. First of all, the photo-crayons. These are best done with the magnesium light; the colour is much better than when done in diffused daylight, and the solar camera is only used in very large establishments, and, even there, I do not think it can be better than the magnesium; however, I have not tried.

I think Mr. Solomon, of Red Lion Square, is the only maker of magnesium cameras. He is the only one I know of. The one I obtained of him cost eight pounds; this is a good size to have. Extras are needed, such as a stand for the plate or paper, and a permanent stand for the camera. These we made, and this is the general *go* of them. The camera is mounted on a table about three feet square; it stands at one end of the table, and that end of the table is near the fire-place. The camera is firmly fixed down by means of two little "cleats" made of tin plate, which I soldered on to the two sides. The camera is not fixed down on the table itself, but on a box, on the table, so that the centre of the lens is about twelve inches from the level surface of the table. Immediately in front of the camera are two parallel bars of wood, and on these the "Sarony" stand runs. The length of the bars will enable the photo-crayon picture to be taken with the small lens supplied with the camera of any size that is likely to be wanted. I cannot better describe this stand than by saying it is a board of wood eighteen inches high, and fourteen wide by one and a-half thick; this stands upright on another board of the same width, and moves to and fro on the parallel rails by means of guides fixed on the bottom of the under board. The face of the upright piece, which is presented to the camera, is painted black with varnish. In their proper places to carry the plate are two little hooks of silver wire, and one placed on one side serves the double purpose of enabling you always to put the plate in the same position, and of preventing its falling off when so placed. The focussing screen is made very simply: take a piece of glass of the same thickness as those on which the photo-crayon will be done, wet it with a sponge, and lay a piece of albumiuized paper down upon it, sticky side down. A few strokes of the sponge on the back, and a little rubbing down with a sheet of paper or cloth, will, in a few minutes, fix it most effectually. This makes an excellent screen, the smooth surface of the back of albuminized paper forming a most delicious tablet on which to receive the image. Rule two lines diagonally across the plate, and these will serve to show when the picture is in proper position.

I find it exceedingly convenient and very economical to use gas-light to arrange the image, and to focus by. This is very simply managed thus: I have a little gas-burner fitted on a stand at just such a height as to place the flame opposite the centre of the condenser of the camera. This little stand is fitted in such a way that I can slip it in and out of the camera in a moment, and the gas is supplied to it by a long length of india-rubber pipe. When in the camera the flame of the gas comes just in the same place as the magnesium light, and gives abundant light to arrange the image. This is, I find, a great advantage, as it not only saves a penny a minute all the time you are getting the picture ready, but also it can be let alone, and the light goes on without being looked after, which makes it very convenient, as in some cases it takes a little consideration to determine the size of the picture, and the best position for it to occupy on the plate.* In determining this latter point I find it no small assistance to have another light in the room (there is a fixed gas-burner just over the camera). This second light, though it greatly dulls the image, enables you to see the focussing screen as well, and thereby renders great assistance.

The vignetting of the picture is best done with a piece of cardboard with a hole in the middle of it, not quite round, but a little triangular, with round corners. This is held between the camera and the screen, and, while the exposure is going on, it is moved a little to and fro, or in any way that the conditions of the case seem to indicate.

(*To be continued.*)

GREEN GLASS FOR DARK ROOMS.

BY J. MARTIN.

Referring to the recent remarks on the advantage of green glass in preference to yellow glass for dark rooms, it occurs to me that this unquestionable boon to the over-taxed eyes of photographers may be secured without much trouble or cost.

A very simple arrangement will change the light passing through yellow glass to a green colour, and without deteriorating its non-actinic properties. This consists in merely covering the glass with some blue tissue paper, varnished with mastic varnish. But as this plan, although desirable from its cheapness, will cause a considerable loss of light, it would be a much better one to fix a pane of blue glass over the yellow one, and either putty it into the frame, or drive a few spriggs round the sides of it, so as to keep it in place. In my own room I have a sliding sash running to and fro in a rebate over the yellow window; thus I can moderate or increase the amount of light at pleasure. I find this plan very useful on bright sunshiny days, when the light, otherwise, would be too strong. The colour of the glass used, whatever it may be, will not affect the sight more injuriously than the too frequent repetition of passing from a room in semi-darkness to one with a fierce glare of light, and the contrary.

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* Care must be taken that the gas flame does not play upon the metal of he camera, or it may melt the solder.—S. P.

Those of your readers who are judges of horseflesh, and have had occasion to purchase a Rosinante, will no doubt call to mind the old way of testing the soundness of its sight by placing the animal in the stable with its head just behind the door, and then partially opening and shutting it. Should the sight be sound, the pupils of the eyes will be seen to contract as the door is opened, and expand as it is shut, thus excluding too much light, or admitting a greater quantity when needed. The human eye acts after he same manner, otherwise man would be purblind, except n one particular degree of light. The too frequent and violent action of the nerves of the eye, called into requisition by this practice, weakens them, and ultimately causes blindness.

As there is no reason whatever that the operating room should be such a dark and badly ventilated place as it generally is, I hope, for the benefit of the sight and general health of photographers, that these evils will speedily find a remedy.

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PATENTS—BRITISH AND FRENCH.*

British.

To secure in this country the property in an invention of a new or improved process, or machine by letters patent, under the Patent Law Amendment Act of 1852, the cost was reduced to £25 in stamp duties, exclusive of the agent's charges of from £10 to £25, making a minimum total of £35. This reduction necessarily multiplied the number of patents, and to place a check upon the further extension thereof, a heavy tax is recommended by many persons, especially the abolitionists. This would certainly have the effect desired, though it is very questionable whether the obstructions it would place in the way of the artisan inventor would not be more injurious than the system it superseded. Other individuals ask to have the tax lowered to £10 or £15 after a preliminary investigation as to novelty, and a more speedy and less expensive tribunal for patent litigation, as recommended under the commission of 1864; and such a measure as this is confidently expected to form the main features of another Patent Law Amendment Act in the forthcoming session of Parliament.

Preliminary to obtaining a patent, an application must be made by the inventor, accompanied by a provisional or complete specification, describing the nature of the invention, and the manner of carrying it into execution. These being presented, a certificate of "provisional protection," or "protection," is issued, as the case may be, by which the inventor secures the right to publish, work, or sell the invention for six months, "without prejudice to his or her patent afterwards to be obtained," is conferred. Where a provisional specification is lodged with the application, a "final specification" must be deposited at the end of six months. The stamp duty for "provisional specification" is £5, and for "complete specification" £10, in diminution of the total cost of £25.

The application with a "provisional specification" is the course generally pursued, as it secures secrecy of the specification, allows time for procuring foreign patents, and opportunities for improving the original scheme, which may be included in the "final specification."

The second stage, whether "provisional protection" or "protection" has been obtained, is to give "notice to proceed," which involves a payment of £5. This notice may be given as soon as "provisional protection" or "protection" is allowed, but *must* be given eight clear weeks before the expiry of the "provisional protection" is published in the *London Gazette* and *Commissioners of Patents' Journal*, with a notice that "any person having an interest in opposing the grant of letters patent shall be at liberty to leave particulars, in writing, of his objections." The "notice to proceed" should, however, be pressed forward and the patent obtained without delay, as when a "provisional specification" has been lodged, he runs the risk of being outstripped should any subsequent applicant apply before him for the great seal. And in this opinion we are guided by the Lord Chancellor's decision in the case of *Bates and Redgate.**

Where the applicant desires to avail himself of the longest term allowed between stages, he or his agent should carefully watch for any application with a conflicting title, and oppose it if any piracy should be attempted.

The third stage commences so soon as the twenty-one days allowed for lodging "objections" have expired, and where no opposition is entered, or after the dismissal of objections, when the applicant can apply for "warrant and great seal," the latest time prescribed for this application being "twelve clear days" before expiry of six months. The payment for warrant and great seal is £10.

The fourth stage is where letters patent having been issued on a "provisional specification," filed with the application, a "final specification" is required to be lodged before the expiration of six months, in compliance with a proviso in the letters patent. The "final specification" must describe in what the invention consists, and the manner or means of carrying it into effect, in a detailed and complete manner, so as to enable a person of ordinary skill in the branch to which the invention relates to obtain the desired result. The law allows the inventor to include the improvements on his original idea or plan made during the "six months," and he may thus extend or curtail the invention described in his provisional specification.

By filing a complete specification with the application, the risk of being anticipated by a subsequent applicant or prior patentee is effectually avoided.

The specification being filed, letters patent will extend to fourteen years, provided the patent be stamped with £50 and £100 stamps, and duly registered within three and seven years from its date respectively.

France.

Patents for Invention (Brevets d'Invention) are *taken* in France, not granted as in England, at a cost of 100 fr. and a yearly payment of 100 fr. Novelty or merit are not subjects of investigation; and to avoid misapprehension on this point, the patentee is required to mark the articles sold under his patent with the words "Sans garantie du Gouvernement" (without guarantee of the government). An office at the Ministère du Commerce is open to the public, where descriptions of patents can be consulted free of charge.

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* *The Stationer.*

* Court of Chancery, May 25 (before the Lord Chancellor). The affidavits showed that the opponent (Birtie) applied for his patent on Nov. 2, 1868, a month after the application of Bates and Redgate, but he allowed no unnecessary time to elapse before proceeding to procure the great seal, which he obtained in January, 1869. Bates and Redgate delayed their application until March 19, 1869. Both inventions were stated to have been made in June, 1868. The Lord Chancellor refused the petition. He thought that an inventor who had filed a provisional specification after another inventor had filed one on the same subject-matter, but who first succeeded in procuring his patent sealed, was in the same position as he would have been before the statute which provided the machinery of provisional specifications. The benefit which the statute intended to confer on inventions from a provisional specification was not protection against the public, but only against the consequences of imprudence on their own part and the betrayal of confidence by their workmen and others. If they desired to have a more absolute protection, they had the means of obtaining it by filing a conditional specification, which must be published at once, and which would bar any other persons seeking a patent for the same invention. A second inventor must advertise, and one who had filed the first provisional specification ought to keep a watch over the advertisements, and, on observing an invention advertised of an apparently similar character to his own, might enter a caveat which would make it incumbent on the Attorney-General to decide which was the prior invention. This opportunity the petitioner had not availed himself of, and his Lordship could not now protect him from the consequences of his omission.

The author of an invention, or his assignee only, is legally qualified to take a patent, but, in practice, the first comer, who in many instances is the pirator, also acquires patent rights, and upholds them against the author or true and first inventor.

Where a foreign patent has been obtained, the right of such patentee is acquired to a French patent to the exclusion of any other, except he be forestalled by a native, but then, if in fraud, the latter is liable to be dispossessed. Prior publicity in France or in any other country invalidates a French patent.

In making an application for a patent the following formalities must be observed :—

1. The sum of 100 fr. (£4), the first year's tax, must be paid, and a receipt obtained. 2. Two duplicate copies of the description, in the French language, and of tracings (if any required), must be made. 3. A petition to the Ministre de l'Agriculture du Commerce et des Travaux Publics for the grant of a patent, no declaration being necessary. 4 A bordéreau or list of the various documents composing the application. 5. The whole of the documents must be enclosed in an envelope, sealed up, and delivered at the office of the Préfecture or Hotel de Ville.

On lodging the before-mentioned documents a receipt is given, bearing a rotation number and date of the deposit. The patent when issued (about three months afterwards) will commence from this date, and will, where a foreign patent has been obtained, expire at the same time as the foreign patent.

Great freedom is allowed in the form of the description ; all that is required is being such a description or tracing, or a combination thereof, whereby a workman of ordinary skill may, without experiment, be able to carry the invention into effect.

The patentee is prohibited, on pain of forfeiture of his rights, from importing into France the patent article from abroad.

The law requires that the invention should be "exploité" (worked) within two years of the date of the signature of the patent, and that the working should not be discontinued during two years consecutively ; in either case justificatory causes of his inaction, such as the want of pecuniary means, are admitted as an excuse, and where the patent has not been disposed of, or carried out abroad ; trials on a small scale are a sufficient compliance with this requirement.

The transfer of patent rights must be effected by a notarial deed in France, and involves the payment of the remainder of the annuities.

The right to improvements is secured to the patentee exclusively during the first year of his patent.

Certificates of addition for improvements, amendments, or additions to the first patent may be secured during the whole term of the patent by the patentee or his assignee, on payment of 20 fr. (16s.)

The law allows great extension to the subject matter of a patent, and is extremely liberal in its construction of the specification and in the protection of patent rights against infringers, inflicting in some cases both penal and pecuniary penalties.

Some alterations on the law have been proposed, and a bill will doubtless be brought in during the ensuing session of Parliament, in which the allowance of the importation of the patent article, and the abolition of the requirement to work the invention, will, it is expected, be included, and further extend the usefulness of the French law on patents.

The cost of a French patent, we are informed by Mr. L. de Fontaine-Moreau, the well-known patent agent, of 4, South Street, Finsbury, is £7, which sum includes tax, fees, and other expenses.

In Belgium, Italy, Austria, and some other foreign states, the laws are on the same principle as the French law, one exception being that novelty in the invention is required only in the country itself ; time, therefore, is allowed for taking out such patents after the English specification is lodged ; and another is that the importation from abroad of the patented article is not prohibited. In view, however, of the present facilities of communication, it is not advisable to delay the application to so late a period.

As the patent laws and regulations in foreign countries are mostly different in principle, and always in their enactments, to our own, and as an omission, or non-observance of one of the requirements of a foreign patent law may prevent the grant of a patent. or render it void when obtained, care should be taken to select an agent combining local knowledge with a long experience.

NOTE ON THE ACTION OF IODINE ON HYPOSULPHITE.

BY C. R. A. WRIGHT, B.SC., F.C.S.*

In a paper on the valuation of manganese ores, read before the Newcastle Chemical Society, on November 25th, 1869, Messrs. Sherer and Rumpf state that they find it necessary to titrate the iodine solution obtained by Bunsen's process with standard hyposulphite solution "as soon as possible after the decomposition, since the solution, in presence of air, gradually reacts on the iodide of potassium and liberates iodine ;" the iodine solutions in each of two experiments requiring an amount of hyposulphite corresponding to 62·7 per cent. of available peroxide in the manganese ore assayed when tested immediately after the decomposition, and to over 65 per cent. after standing twenty-four hours ; Fresenius and Will's process giving, with the same sample, the intermediate number, 63·5 per cent.

In order to see how far this discrepancy might be accounted for by a possible irregularity in the action of iodine on hyposulphite under different circumstances, as to temperature, &c., a solution of iodine, in potassium iodide, was prepared of the strength of 5 grammes free iodine to the litre ; a solution of pure recrystallized sodium hyposulphite was also prepared.

Into each of eleven flasks 25·65 c.c. of this hyposulphite was measured by a pipette delivering that amount ; about 200 c.c. of water was added to each. In the first flask the quantity of iodine solution requisite to produce a blue tint along with starch at the ordinary temperature of the air (16° C.) was determined ; the second flask was heated to about 60° C., then allowed to cool, and finally titrated as before : almost the same amount of iodine being required, it appears that simply heating the hyposulphite solution does not appreciably alter the quantity of hyposulphite present.

The next eight flasks were heated to varying temperatures, and, while hot, a quantity of iodine solution, rather less than that required for the hyposulphite, as deduced from the first experiments, was added, care being taken to run the iodine direct into the warm liquid, and not down the sides of the flask, which might cause a loss of iodine by volatilization. No smell of iodine was observed in any case. The addition of this iodine solution slightly cooling the liquids, their temperatures were again read off, the mean of the two temperatures being taken as the average ; the warm liquids were then rapidly cooled by immersion of the flasks in cold water, and finally the slight excess of hyposulphite determined by iodine solution ; the cooling was essential, since heat destroys the colour of the iodized starch.

The last flask was again titrated at the temperature of the air (16° C.) at the close of the experiments, to make sure that the hyposulphite had not altered spontaneously.

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* Read before the Newcastle-upon-Tyne Chemical Society.

The numbers obtained were—

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Temperature of solution before addition of iodine solution	—	—	32	40	52	55	86	88	100	100	—
Do., after... ...	—	—	28	36	44	46	65	78	83	85	—
Mean temperature	16 C.	25	30	38	48	50	75	83	91	92	16
C.C. of iodine required ...	39·6	39·4	39·8	40·0	40·1	40·1	40·7	40·9	41·4	41·2	39·5
Iodine required in excess of that normally requisite, viz., 39·5 c.c. ...	—	—	0·3	0·5	0·6	0·6	1·2	1·4	1·9	1·7	—
Do., in per cents. of the normal quantity ...	—	—	0·75	1·25	1·5	1·5	3·0	3·5	4·75	4·25	—

From these numbers it is evident that the higher the temperature the larger is the quantity of iodine requisite before a blue colour with starch is developed; *i.e.*, the action of iodine on hyposulphite is slightly irregular at varying temperatures. Since the first action of iodine is to form tetrathionate (which, as is well known, is converted into sulphate by the action of chlorine), it appears probable that the conversion of tetrathionate into sulphate by iodine may account for the excess required. Probably, therefore, if the mode of experimenting were reversed (*i.e.*, hyposulphite added to warm iodine solution, the latter being always in excess till just the close of the experiment), a greater discrepancy would be manifest. It is difficult, however, to manipulate thus without loss of iodine by volatilization; but it was found that an excess of iodine added to hyposulphite gradually diminished on standing some hours at the ordinary temperature; *i.e.*, less residual free iodine was found after standing than was present immediately after the addition to the hyposulphite.

Thus, 25·65 C.C. of a rather weaker hyposulphite solution than that previously used was pipetted off into each of ten well stoppered bottles; two were immediately titrated with the former iodine solution; the requisite amount of iodine as thus deduced was added to each of the others; to five of them a varying excess of iodine, and to the remaining three a varying excess of hyposulphite; thus, each of the eight originally contained the same amount of tetrathionate. After standing twenty-four hours in a cupboard (in the dark) at the ordinary thmperature (10° — 20° C.), hyposulphite was added in slight excess to the five in which the iodine was originally in excess, and, finally, all were titrated with the iodine solution. The following numbers were obtained:—

	Original excess of Hyposulphite.	Original excess of Iodine.	Total Hyposulphite used.	Iodine equivalent to Hyposulphite (deduced from A. and B.).	Total Iodine used.	Ratio of Iodine and Hyposulphite used.
A.* ...	—	—	25·65	—	63·3	2·467
B.* ...	—	—	25·63	—	63·35	2·470
C. ...	—	0·1	26·25	64·8	64·9	2·472
D. ...	—	0·2	26·4	65·2	65·1	2·466
E. ...	—	6·7	28 2	69·6	72·7	2·578
F. ...	—	16·7	31·85	78·6	82·0	2·574
G. ...	—	36·7	37·85	93·6	101·9	2·692
H. ...	1·5	—	27·45	67·8	67·9	2·474
I. ...	5·9	—	31·50	77·8	77·65	2·465
J. ...	9·7	—	35·25	87·05	87·2	2·474

* Titrated at once.

From these numbers it appears that in the three last experiments there was no action whatever between the tetrathionate present and the excess of hyposulphite; while in experiments E, F, and G, a considerable amount of iodine has *disappeared*, this amount increasing with the original excess of iodine, thus—

	E.	F.	G.
Excess of iodine	6·7	16·7	36·7
Iodine disappeared	3·1	3·4	8·3
Ditto, in per cents. of the normal amount	4·4	4·3	8·9

Similarly, in another experiment with the above iodine solution diluted to one-third its former strength, after twenty-four hours—

Original excess of iodine	5 C.C.	13 C.C.
Iodine corresponding to total hyposulphite used	163·1	164·4
Total iodine used	166·7	169·9
Excess of iodine	3·6	5·5
Ditto, in per cents. of normal quantity	2·1	3·3

On the whole, therefore, these experiments indicate that when the temperature is not lower than 28° C., or when a mixed solution of hyposulphite and iodine still in excess is allowed to stand some time before finishing the titration, a deficiency in the amount of iodine may be expected, varying in amount with the circumstances: possibly, these facts may account for the results obtained by Messrs. Scherer and Rumpf.

The fact that sulphate is formed by the prolonged action of iodine on tetrathionate is indicated by the following experiments:—50 C.C. of the hyposulphite solution used in the past experiments were mixed with 150 of iodine (large excess); after standing forty-eight hours at the ordinary temperature in the dark hyposulphite was added till all free iodine disappeared: chloride of barium gave with this liquid a dense cloud, which, after standing, was collected, and found by the blow-pipe to be really barium sulphate. 50 c.c. of the original hyposulphite with barium chloride gave not the slightest precipitate; after addition of a few drops of hydrochloric acid the solution did not become opalescent for a minute or more; and the precipitated sulphur after standing some hours was wholly volatile, showing that no sulphate whatever was present originally in the hyposulphite.

My best thanks are due to Mr. I. L. Bell, in whose laboratory the above experiments were carried out.

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Correspondence.

SILVER PRINTING *VERSUS* CARBON.

Sir,—In the spring of last year I commenced a series of articles which were planned to embrace every particular concerning the failures, remedies, and dodges that are connected with the silver printing processes. I had, however, proceeded with the design only as far as the treatment of matters belonging to the sensitizing bath, when an impression dawned upon my mind that my labour of love was "love's labour lost," as the photographic journals, in their observance of the duties they owe to progress, were growing more and more fervent in their admiration and advocacy of carbon, and more and more intense in their condemnation of the silver printing adoption. I began, therefore, to imagine myself in a position somewhat absurd when, from week to week, I saw poor silver printing shot at. I freely confess my regret as I viewed the future of silver printing as foreshadowed by the importunate journalists; yet, recognizing the position, I girded anew my strength of will, and determined, ere the requiem was sung, cheerfully to turn my back on the field I had striven so hard to win, and try my fortune in that tempting direction which long has been, yet is not. In plainer words, I had made up my mind to discard silver printing. Ere I proceeded to carry my project into execution, however, I deemed it prudent to survey the position before venturing on untried ground.

The first point that received attention in carbon printing was the matter of cost, which in these days of pinching competition is a subject that demands a serious consideration. On inquiry I learned the price of carbon tissue to be threepence per square foot, which is equivalent to ninepence for each sheet measuring 24 by 18 inches. Comparing this price with the cost of a sheet of sensitized albumen paper, the increase on the former amounts to nearly, if not quite, fifty per cent. This additional working expense, however, I feel disposed to regard as of little moment. I therefore advanced to the next stage of enquiry, feeling it necessary that I should ascertain the probable amount of waste to be incurred in working a process where the operations are conducted in the dark. After a time I succeeded in getting the information from a reliable authority, whose direct interest in the success of a process he felt bound to condemn, on grounds of comparative loss, leads me to believe his evidence to be within the bounds of truth. If such be the case, the waste occasioned by uncertainties of exposure and other causes is as ten to one in favour of silver printing. My experienced informant favoured me also with a peep behind the scenes, where I perceived troubles which the outer world are told but little of by those who are advocates of carbon printing, as embodied in Swan's patent, with its supplementary modifications; for, independent of the difficulties connected with the preparation of the tissue, further troubles have to be encountered when the paper and tissue are dealt with by the consumer.

I need not, however, pursue this line of enquiry further, as my object is not to write down any process, but to review the matters now before me by their several merits, in a way as fairly and unprejudicially as I am capable of doing. Suffice it here to state, in reference to carbon printing, that I was not, nor am I now, discouraged from embracing carbon printing to the relinquishment of silver, because of the mechanical difficulties which belong to the manipulative department; these are conquerable by observation and experience; but I fear that the consideration which compels me to discard for general purposes the adoption of carbon printing is one which in the present state of photographic art offers an objection which must be pronounced insurmountable. I allude to the undeniable fact that among negatives taken by photographers, amateur and professional, at least seventy-five per cent. are unfit to be printed from by any known carbon process. The drawback to which I reluctantly allude is a most serious one, and one which will render it absolutely impossible for any photographer, however eminent, to set aside silver printing from his establishment altogether, for the most skilful get a pretty fair share of bad negatives in common with the less favoured brethren. Whether the perfections of a process are made less perfect by the imperfections of another to which it is perforce allied, is a subtle problem which must be left to some logical mind to determine. My business here is to state facts, and offer some comments which bear on them *pro* and *con.* There is doubtless a great future for carbon printing, but until that future comes, I would, on prudent grounds, request of those who hold the reins of the carbon processes, and those who write thereon, to abstain from that suicidal course which warrants every professional photographer to exclaim, "Save me from my friends!" because it is, to some extent, to the inconsiderate admirers of Swan's process the public are indebted for the fears they entertain concerning the fading propensities possessed by everything in the shape of a photograph.

If the carbon processes were sufficiently matured to fairly supply the place of silver printing, some reason could be given for abandoning the latter. But facts are contrary; and, although for five or six years the praises of carbon have been sung by pamphlet, books, photo journals, and newspapers, it is always coming, not come, yet shows that its absence from commercial activity bears out the correctness of my remarks concerning its shortcomings; and I do fervently wish the public to be made acquainted with the fact that a silver print is not necessarily such a perishable article as they have been taught to believe, not alone by the statements of carbon advocacy, but, unfortunately, by the ocular demonstrations supplied by those whose works in silver have done much to propagate the delusion, as I shall by-and-bye endeavour to show.

It might, perhaps, be considered that I am now writing as one having vested interests to maintain. A believer in the reality of progress, when prudence bids me move forward I am ready, without counting cost, to press on. I hold it to be bad policy to stand to squabble over vested interests when progress gives the word, Advance! This must be my answer.

"Give a dog a bad name, and 'twere a mercy to hang him," is a proverb which applies to other than canine innocents—silver printing, for example. Prints produced in silver undoubtedly have faded, do fade, will fade. On the other hand, we might apply the three tenses negatively, and add the third in a spirit of prophecy, for proofs are not wanting to show that silver prints which have reached the age of years have suffered no change, and, in all probability, will exist unchanged for many years to come. Such being the case, we approach to enquire: If one print has escaped the attack of yellows, why should not all prints of silver have been privileged with a like immunity?

Now, with reference to this matter of fading silver prints, I have no hesitation in declaring that photographic curse, cheapness of production, to be at one end of the matter; negligence and ignorance standing at the other. At this moment, is there not advertised, at prices the most ridiculous, paper which, because of its cheapness, is perforce prepared with a stinking material, called, by strained courtesy, albumen? Those advertisements, continually repeated, prove the stuff advertised finds a sale; and the sale is an assurance that much paper is used which bears decomposition on the surface ere it forms part of the picture, which is produced only to fade. I will so far sympathize with the purchasers of such rubbish as to admit that keen competition has driven them into a cheap market; but, as far as I am concerned, cheapness would drive me out of the market ere I would consent to sell or use that which I knew would prove a serious injury to a wide-spread industry. Nor am I singular in this matter, for there are several (whom to name would be too invidious) who continue selling a genuine article, in the way of prepared papers, at a reasonable profit.

Again, in the case of cheapness of production, is not the printing of pictures intrusted to assistants whose only care is to produce prints that will pass immediate scrutiny, leaving to fate and providence the matter of future lasting? In this last respect, unfortunately, there is no certain remedy. Apart from the cost of production being made sufficiently high to give due remuneration to intelligence, I know of no power, that would make silver prints permanent, so potent as intelligence made contented by ample remuneration. I would strongly urge upon photographers, at all costs, to exercise a strict surveillance upon the fixing and washing of their prints. The printing and toning speak for themselves, and speak in time, at any moment before they are sent home; whilst the defects of washing and fixing are only discovered in quarters where they occasion mischief.

"But silver prints, in theory, must, sooner or later, perish," writes an authority. Apart from the truism involved in the theory of the perishable nature of all sublunary things, I know of no scientific argument that supports a theory which endeavours to prove the exceptionally perishable nature of a silver photograph. "Sulphur in albumen!" True: there are also oxygen and nitrogen in the air we breath. They do not poison us. Nature is too good a chemist to mix so foully, and the sulphur, as mixed in albumen, is, in my opinion, as harmless to a photograph as the atmosphere is to the human lungs. The sulphur that attacks a print is not derived from the albumen, but from the hypo that is conveyed by the prints into shallow dishes after (too often) imperfect fixation in the stronger fixing solution. I have proof to show that a silver print does not necessarily bear within itself the elements of its own destruction. A collodio-chloride print is doubtless as imperishable as a carbon print. I have applied a severe test to verify this assertion. Albumen prints are unquestionably most prone to fade. Seeing, therefore, how matters stand, that silver printing is an absolute necessity, that no photographic high art can satisfactorily be executed without it, or low art be made presentable, why not give up the vulgar glaze in favour of "mat papers?" Let photographers say the word, and I will undertake to ransack nature and science until I may find a suitable substitute for the organic substances that make photography a suspicion and scorn; and when success is reached, I will make the trade a present of the idea.

In conclusion, I would remark that the future of carbon is not a process such as Swan's, nor the mechanical modifications of Woodbury. I believe that Albert has touched the key-note of the carbon future; and those who follow in his wake and improve unto perfection will do most in removing from the guide-book to photography the silver printing processes; and, until carbon printing is made mechanically perfect, silver printing must remain; for that millennium when all who essay will succeed in photographic negative-taking will never come; nor will that time ever arrive when men will, by preference, consent to work in the dark.

W. T. Bovey.

[It is right to add that this letter was written before Mr. Johnson's last paper had been read at the South London meeting, since which Mr. Bovey has written to say that many of his doubts had been solved; but as this letter honestly raises several issues of interest, it is better published than withdrawn.—Ed.]

COLLODIO-CHLORIDE PAPER.

Sir,—Some weeks ago, while remarking on the collodio-chloride paper, in the News, I noticed that you drew comparisons between the paper produced by MM. Sander and Risse, and that manufactured by Herr Obernetter, which seemed to me rather derogatory to the latter.

Of the Norden paper I can say nothing, never having seen it; but would like to make a few remarks on that of Herr Obernetter. I am further incited to this by the article from the pen of Mr. Spiller in your last impression.

I have used this paper for nearly two years. In my early experience with it I was annoyed by the film becoming loose while washing, and sometimes splitting after the prints were mounted. This difficulty I in a great measure overcame early last year; and since that time a very small percentage of prints have been destroyed from that cause. As a proof of this I may mention that in fifty-four dozen of cartes, finished lately, there were only fifteen prints lost by the loosoning of the films; and for the loss of these I think I was to blame, in allowing them to remain for twenty hours in water.

One of our foremost Scotch photographers, who is at present experimenting with this paper, while writing to me a few days ago, asks this question: "What can be the cause of the film becoming loose on some of the prints?" Will you, sir, allow me to transcribe the part of my answer to his letter bearing on this difficulty, as it may help other photographers to work the paper with more ease:—

I found, while working some samples of this paper and using the acetate and lime toning baths, that the film loosened more frequently than when toning with the sulphocyanide. I therefore gave up the use of the two former baths, and used the latter only. But even with this bath the splitting continued, though not nearly to the same extent. I tried various means to overcome this difficulty, and at last succeeded. The formula I use is—

No 1.—In fifty ounces of distilled water dissolve sulphocyanide of ammonium, one ounce two drachms; bicarbonate of soda, twenty grains.

No 2.—In fifty ounces distilled water dissolve five or six tubes chloride of gold.

Fixing Bath.

Hyposulphite of soda	5 ounces
Distilled water...	30 ,,

To prepare a bath, I measure out the quantity of gold solution necessary for toning the batch of prints on hand, put it into a bowl with plenty of powdered chalk; then take another basin with hot water; place in it the vessel with the gold solution, allowing it to remain (say) from ten to fifteen minutes, till the water and the solution are nearly of the same temperature. I then remove the gold solution, let it stand till it cools (or, if I am ready to tone, mix it with an equal quantity of the sulphocyanide of ammonium solution), and then filter. I fix in a *strong* solution of soda, keeping the prints in the bath from two to three and four minutes; by so doing I secure purer whites than I would get by fixing in a weaker bath.

Last year I toned, washed, and mounted in the same day; but, somehow, I found that the next day suited better for mounting, and therefore generally let them wash from eighteen to twenty hours. I believe, however, that with some samples of Obernetter papers this washing is too long.

Will you, Mr. Editor, allow me to send you a sample of this paper? I shall feel obliged by your trying it with this mode of working, which, you will perceive, is your own formula. I may mention that the paper from which this sample is taken was received by me in January last.

I am glad to say that a number of photographers in Great Britain who have tried this paper are delighted with its results, and are now working it w th satisfaction; and I have no doubt but that ere long it will be generally used.—I am, sir, your obedient servant, George Bruce.

Dunse, 28th March, 1870.

[Nothing can be more perfect than the quality of prints received with this letter. We shall have pleasure in repeating the operations with a fresh sample of the paper.—Ed.]

Talk in the Studio.

An Unusual Group.—We have received from Mr. Martin of Burton-on-Trent, a card picture of a group possessing a rare and curious interest. It consists of four infants presented to her husband at one birth by Mrs. Ketley, the wife of a brewer's labourer, on the 9th instant. The four children are on the lap of a brawny nurse, who seems to enjoy the fun of the situation immensely. They are, although only three days old, apparently fine, well-grown children. They were taken under serious difficulties in a small bed-room with small window facing a red brick building. Mr. Martin concludes his letter by hoping that he will never again have a similar task, a hope in which we may, without impropriety, express a belief that every one concerned will heartily join, notwithstanding that the photographer's work is certainly well done.

Ornamental Borders.—We have received from Mr. Schmidt, of Clifton, some examples of very pretty ornamental printing in the form of borders round vignetted portraits. Mr. Schmidt's method seems to be efficient, and will be found acceptable to those who desire to produce novel designs, by means of double printing, as *entourage* to card portraits.

Retouching Negatives.—Mr. Solomon has introduced a varnish giving a dead or biting surface for facilitating the operation of retouching negatives with lead pencil. Mr. Croughton, whose valuable practical hints on this subject are familiar to our readers, writes as follows on its qualities:—"I have received from Mr. J. Solomon, of Red Lion Square, a bottle of varnish and some pencils, both to be used in the retouching of negatives. Of the pencils I need only say they are Faber's, and are the best I have used for the purpose. Of the varnish I cannot speak too highly. It is applied cold to the negative, and left to dry for an hour or two. It gives a dull surface with a grain or tooth that takes the pencil better than anything I have tried before. After the retouching has been done, the negative is varnished in the ordinary way, which protects the touching from injury while printing. I consider it a most valuable addition to the requisites for retouching." Mr. Croughton has also introduced a retouching desk, like that described in his articles, which will be found invaluable as an aid in working. Details will be found in our advertising columns.

In re the Photo-Relief Printing Company.—(Before Vice-Chancellor Malins.)—This company was being voluntarily wound up, and an order was now made by consent that the winding-up should be continued under the supervision of the Court. It was also arranged that the voluntary liquidator should retire.

Fine Art and Industrial Exhibition at Derby.—An exhibition of works of industry and art is projected at Derby, to be opened in May. Mr. R. Keene, of Derby, who is entrusted with the organization of the photographic department, will be glad to receive contributions illustrating the different branches of photography.

A False Rumour.—We understand that a false and foolish rumour has gained some amount of circulation, to the effect that Mr. Ross had ceased to manufacture lenses. The optical business is, we understand, actively carried on in Wigmore Street as heretofore, as may be learned from an announcement in our advertising columns.

Sunday Photography.—The superintendent of police at Exeter has informed two or three photographers of that city, who have been in the habit of taking portraits on Sundays, that he intends, if they continue the practice, to take proceedings against them under the Act 29, Charles II. The magistrates have told Mr. Steel that they would give him every assistance in the matter. The Act referred to imposes a fine of five shillings for every distinct offence.—*Western Morning News.*

Testing of Alcohol and Spirits for Amylic Alcohol.—Since the internal use of amylic alcohol, even in small quantity, is very deleterious, the means of rapidly testing for its presence in spirits and alcohol (either for pharmaceutical or scientific use) is of importance. The suspected alcohol is poured into a burette, mixed with its own bulk of rectified and pure ether, and also its own bulk of water, and the mixture gently shaken; the ether, on becoming separated from the rest of the fluid, floats to the top, containing in solution the whole of the amylic alcohol which might have been contained in the alcohol or spirits under examination. The ether is removed by a pipette, and on leaving it to spontaneous evaporation will leave behind the amylic alcohol, readily detected by its offensive smell.—*Chemical News.*

Fixative for Drawings.—"Correspondents," says the *Builder*, ask us, from time to time, the way to set pencil and charcoal drawings. We have just had an opportunity of testing an invention by M. Rouget, one of the masters of the Government schools in Paris, for 'permanently and instantaneously fixing every kind of fugitive design, such as those produced by chalk, crayons, pastels, lead pencils, or other similar materials.' It consists of a liquid which is blown through a little glass apparatus, in the shape of a minute shower that spreads itself over the paper, so that the drawing is not rubbed by a brush being passed over it. Through the fineness of the spray the paper is not cockled, neither does the liquid appear to leave any mark. Our test was severe, and upon rubbing the drawing operated upon with india-rubber, nothing moved, nor was any appearance of a smear produced. It seems a very valuable preparation. According to the London agents, Corbière and Son, it is equally efficacious with photographs."—[This preparation is, we understand, a solution of an alkaline silicate, and although it will, doubtless, fix the chalk touching upon photographs, it must not be expected to preserve the photograph itself in any way.—Ed. Photo News.]

Researches on Bromide of Potassium: its Best Preparation and Composition when Pure.—M. Adrian gives the results of analysis of ten samples of bromide of potassium, from which we condense the following points:—The quantity of water interposed (water of decrepitation) between the crystals varied from 4 to 0·5 per cent.; the quantity of free, or carbonated alkali, not combined with the haloid, varied from 4 to 1·5 per cent.; the quantity of iodide of potassium (contained only in three out of the ten samples), varied from 2 to 0·5 per cent.; the quantity of bromide of potassium varied from 91·60 to 62·80 per cent. (average of ten samples, 83·67 per cent.); chloride of potassium varied from 3·5 to 30·07 per cent.; sulphate of potassa varied from 0·90 to 3·30 per cent.; while of bromate of potassa traces were present in all, and an appreciable quantity in one sample.—*Journal de Pharmacie et Chimie.*

To Correspondents.

Venator.—As we anticipated from your account of your failure, your mode of working differs in several essential particulars from that which we have recommended as best. So far as our observation and experience goes, a much richer collodion print can be obtained by means of pyrogallic acid development than by iron development. Under some conditions good rich images can be obtained by means of iron development; but, as a rule, the developer recommended by Mr. Burgess can be best depended upon. Next, as to transferring, you have adopted the method least likely to succeed in allowing the film to dry first. Try proceeding as follows: after the plate is toned and washed, apply your transfer paper, and press down with a squeegee, so as to remove air-bubbles; then set the plate aside to dry *spontaneously*. If the plate have been perfectly clean, and the collodion of a suitable kind, the film and paper will often peel off spontaneously when dry. If this does not take place, immersion in a dish of water will generally cause the print to leave the glass without difficulty. The collodion should be tough, and of good body. Immersion in a solution of citric acid for a short time after toning will aid the final leaving of the glass, but this is not necessary. Some operators give the film a coating of a weak solution of meta-gelatine before applying the transfer paper, but this is most commonly done when the film is about to be removed at once before drying. It is not customary to varnish collodion prints before transfer, and such an operation renders transfer very difficult.

D. D. N.—So far as we have tried the ebonite baths, they are quite trustworthy.

Fair Play.—For another photographer to copy and sell as cards your large pictures is undoubtedly dishonourable, or even dishonest. If you had registered your copyright in such pictures you could have had a legal remedy, but otherwise you have no redress.

T. B. Hatcherton.—If you had sent us an example of the defective tones of which you complain, we could have formed a more accurate idea of the cause than we can from description. Does the print assume the "filthy yellow brown" colour in the toning bath or in the fixing bath? You speak of the colour as being acquired in the toning bath, but it is more likely to be acquired in the fixing bath. If this colour be due to the toning bath it is undoubtedly due to a trace of hyposulphite of soda having by some means got into the solution. This is a result more easily caused than many young photographers are aware of. For instance, if the fingers have touched the hyposulphite solution, and then come into the gold solution, a decomposition in the latter will be caused, which will issue in dirty brown tones. If the yellow brown tone be due to the fixing bath, it is the result of imperfect fixation, arising, probably, from the hyposulphite solution being old, weak, and exhausted.

H. V. C.—Our experience with various stoves is not sufficiently extensive to enable us to say which is best, but in no case can we recommend one without a flue. However perfect the combustion, the products of combustion should be carried off out of the room, and a draft formed to get rid of vitiated air and bring in fresh air. Neither zinc nor lead are perfectly safe linings for cisterns intended for soft water. Wood lined with gutta-percha or with a good asphaltum varnish will answer better. Soft water which has stood some weeks in open tubs will not generally be very pure, but may be made so by means of permanganate of potash.

C. J. Turrell.—There is no complete list of either town or provincial photographers in existence. Perhaps the best accessible list is that of the members of the Photographic Society issued with the last number of its Journal.

Oxoniensis.—All our own experience of the Liverpool dry plates, and all we hear of them, gives us faith in them. They require care, of course, but there are no especial difficulties in developing which a careful attention to instruction will not meet. Almost all Mr. Stillman's views of Athens and its neighbourhood hung at the last exhibition in Conduit Street were on these plates. See his remarks on the subject in a recent number of the News. We do not know of any one who prepares plates by Mr. Gordon's process commercially.

G. Turner.—The silver solution drying or receding from the edges of the plates, and causing stains, is most frequently due to the use of a horny, repellent collodion. The simplest remedy is to set the collodion aside, and use another sample, and that set aside will lose its horny, repellent character after keeping some time. If you do not wish to do this, try adding one or two drops of distilled water to each ounce of the collodion; this will often effect an improvement. Do not keep the plate out of the bath after coating longer than is necessary. Sometimes slightly reducing the silver bath is found a remedy.

James Watson.—Linen sheeting will do very well for covering a background screen. There are various methods of colouring it slate colour. You may use distemper colour, soap flatting, or oil flatting. Much depends on your skill or familiarity with such work as to which will answer your purpose best. Probably oil flatting will be best. First of all, size the linen by giving it a coating of thin glue size. Next give it a coat of grey oil paint, and then another coat of grey paint mixed with the least possible amount of oil, using turpentine as the dilutent instead. You can get the paint mixed of the desired tint at an oilman's.

J. J. Fitzpatrick (Roorkee).—The Year-Book shall be sent. For any one to put his name on the photographs of others and pass them as his own work is a gross act of dishonesty.

W. S. Buddicom.—The address of Mr. England is 7, St. James's Square, Notting Hill, W. Letter in our next.

J. N. (Melbourne).—The lithographic process to which you refer is described in the Photographic News of April 1st, 1864, and some further details relating to it appear in the number following. It is somewhat curious that it has been the subject of three independent discoveries. Mr. Lewis, of Dublin, first discovered and patented it. Soon after, Mr. Hannaford, not aware of what had been done by Mr. Lewis, suggested the process in our pages, and some years afterwards again Mr. Toovey, of Brussels, patented the process. The latter gentleman has produced some very good results by it.

Albert.—As a rule, an angle of about 45° is best for the roof of the glass house. We are afraid that your space is somewhat too limited for a perfect glass house; but the general plan you propose seems calculated to make the best of your space. We should make the north side and roof all glass, except about five feet at background end; the height at eaves about eight feet; at the ridge about thirteen feet. 2. The acetate bath is best for producing warm chestnut tones; but a brilliant and intense negative is necessary.

B. B. P.—One of the simplest modes of securing more vigorous negatives consists in using a collodion of more body, or in adding about a grain more soluble cotton to each ounce of collodion. As a rule, it is difficult to obtain fine vigorous negatives from a collodion giving a thin opalescent film. The addition of gelatine or sugar to the developer also aids in securing intensity.

A. K. H. (Bermuda).—Your letter was duly received, and the queries answered, but as you suggest the probable loss of the mail which conveyed the News, we repeat the reply given. It is quite possible to photograph the interiors of caves by the aid of the magnesium light. It is best to use a lamp with a concave reflector. The amount of wire or ribbon necessary, and the length of exposure, must much depend on the size of the cave, as the further the various sides of the cave are from the light, the less intense the illumination will become. One or two experiments will best determine this point. The chief difficulty will arise from the rapid accumulation in the atmosphere of the dense white fumes, so that if the result is not obtained in the first two or three trials, it will be necessary to wait until these fumes are dissipated before proceeding further.

Several Correspondents in our next.

Several Articles and Reviews are compelled to stand over until our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

	PAGE
Reproducing Negatives	157
Atmospheric Impurities and Rain-water	157
Some Chat about Carbon Affairs, Personal and Otherwise. By William Blair	158
Note on Carbon Printing. By M. Dupuis	160
Chloride of Aluminium as an Accelerator in Collodion. By M. Louis Terragno	160
Toning in the Fixing Bath	161
On the Source of the Difficulties Presented by the Collodio-Bromide Process. By M. Carey Lea	161
Gathered Fragments. By David Duncan	161
Plain Paper Work. By M. K. Sutliff	163
Correspondence.—Commercial Dry Plates, &c.—In the Matter of Paul Pretsch—Female Labour in the Studio	164
Proceedings of Societies.—French Photographic Society—Bristol Photographic Society—Liverpool Amateur Photographic Association	165
Talk in the Studio	166
To Correspondents	168

REPRODUCING NEGATIVES.

We recently referred to the fact that Mr. Solomon had introduced into his establishment the system of supplying instructions in certain useful but unfamiliar operations in photography. One of these is a simple and efficient method of reproducing negatives, and, as an incidental operation in producing the final result, a simple plan of printing transparencies.

The method of reproducing negatives is as follows:—A sample of collodio-chloride paper is prepared with an express view to the final removal of the film from the paper. It is something like the Obernetter enamelled paper, the collodio-chloride of silver being applied to a paper having an enamelled surface consisting of some white pigment and gelatine. Upon this the negative is printed very deeply. The image may be toned and fixed in the usual manner, but simple fixation in a hyposulphite solution is, we think, best, as a fine non-actinic colour is secured. The print is washed and then placed in a dish of hot water, which loosens the film, but does not detach it from the paper. The print is then placed face down on a plate of glass, and the paper is lifted away, leaving the film on the glass. A broad camel-hair brush, dipped in warm water, is used to remove all traces of the white pigment, &c., from the film. This done, a piece of paper is laid upon it, one edge of the film turned over, and the whole is then lifted up together in order to place the film on its final resting place. This is another plate of glass, to which a coating of a very weak solution of gelatine has been applied, and dried. It is placed for a moment in cold water to moisten the gelatine, and the film containing the image is applied to it, and pressed down with a small elastic scraper of vulcanized india-rubber we have before described as a "squeegee." The paper which had assisted in the transport of the film is now lifted away, and the transparency is left to dry.

To reproduce the negative, precisely the same operations are repeated, printing on a piece of the same paper from the transparency, and transferring in a similar manner. By this means very excellent reproduced negatives may be obtained, the fixed but untoned silver image being of an excellent printing colour.

Of course several of these manipulations could be saved by printing a transparency on collodio-chloride applied direct on glass, and printing a negative on another collodio-chloride coated glass. But whilst certain manipulations would be saved, two especial advantages of the use of the prepared paper would be lost. In the first place, in reproducing negatives, perfect sharpness in both transparency and negative is important, and it is difficult, in printing by superposition on glass, to secure such perfect contact as on paper. In the next place, some trouble is saved by being able to purchase a collodio-chloride film ready, which will yield a vigorous image, instead of having to prepare a special sample. It is worthy of remark, even if the paper be very old and much discoloured, it answers perfectly well, for it is found that this discolouration is confined to the paper, and does not affect the colour of the collodio-chloride image itself. The chief point which, we think, might possibly admit of some improvement, is the paper which is coated with collodio-chloride of silver. The soluble stratum on which the collodio-chloride rests is, as we have said, a mixture of white pigment and gelatine, which softens on the application of hot water, and permits the film to be removed. The presence of this pigment is objectionable, as it is injurious if any particle be left, and it is troublesome to remove. A coating of gelatine alone, without pigment, would answer every purpose in facilitating transfer, without giving trouble.

Besides its use in the reproduction of negatives, this paper is used for producing fine transparencies. Transparencies obtained in this way are employed by Geymet and Alker for use in their mode of enamelling, a better result being obtained from them than from transparencies obtained in the usual way, and the transfer paper is prepared by the French firm named expressly for obtaining the transparencies which serve as *cliches* in their enamel process, the idea of its application in the reproduction of negatives being entirely due to Mr. Solomon.

ATMOSPHERIC IMPURITIES AND RAIN-WATER.

Many photographers have been in the habit of regarding filtered rain-water as almost equal in purity to distilled water. The recent lecture of Professor Tyndall, besides being suggestive in itself, will recall some microscopic researches by Dr. Angus Smith and Mr. Dancer as to the constituents of the atmospheres of towns, to which Dr. Smith has, in a recent paper, again called attention. His mode of examining the air was different to that of Professor Tyndall: instead of subjecting it to scrutiny *in situ*, he washed the air, so to speak, and then examined the washing water. We will quote his own report as to the details. He says:—

> A bottle of the capacity of 4·990 c.c. was filled with air and shaken with water. The bottle was again filled and shaken with the same water, and this was repeated 500 times, nearly equal to 2½ millions cb.c., or 2·495 litres. As this could not be done in a short time there was considerable variety of weather, but chiefly dry with a westerly wind. The operation was conducted behind my laboratory, in the neighbourhood of places not very clear, it is true, but from which the wind was blowing to all parts of the town. I did not observe any dust blowing, but if there were dust it was such as we may be called on to breathe. The liquid was clouded, and the unaided eye could perceive that particles very light were floating. When examined by a microscope the scene was varied in a very high degree—there was

evidently organic life. I thought it better to carry the whole to Mr. Dancer, and to leave him to do the rest, as my knowledge of microscopic forms is so trifling compared to his.

Having for years, therefore, convinced myself of these results, I took the air washings to Mr. Dancer, of Manchester, whose experience in microscopic objects is so great that I was certain to be corrected if I erred, and if I did not err I should be taught more. His examination is very beautiful, and it shows not only organic substances, but very many in quality and inconceivably many as to quantity. The whole cannot be quoted, but the following will suffice :—

"The water was first examined with a power of 50 diameters only, for the purpose of getting a general knowledge of its contents. Afterwards, magnifying powers varying from 120 to 1,600 diameters were employed.

"During the first observations, few living organisms were noticed; but, as it afterwards proved, the germs of plant and animal life (probably in a dormant condition) were present.

"1st. *Fungoid Matter.*—Spores or sporidiæ appeared in numbers, and, to ascertain, as nearly as possible, the numerical proportion of these minute bodies in a single drop of the fluid, the contents of the bottle were well shaken, and then one drop was taken up with a pipette; this was spread out, by compression, to a circle half an inch in diameter. A magnifying power was then employed which gave a field of view of an area exactly 100th of an inch in diameter, and it was found that more than 100 spores were contained in this space; consequently, the average number of spores in a single drop would be 250,000.

"On the third day a number of ciliated zoospores were observed moving freely among the sporidiæ.

"Some of this formed a very interesting object, with a high power, and the greater portion exhibited what is called pitted structure. The larger particles of this had evidently been partially burnt and quite brown in colour, and were from coniferous plants, showing, with great distinctness, the broad marginal bands surrounding the pits; others had reticulations small in diameter. They reminded me of perforated particles so abundant in some kinds of coal.

"Along with these reticulated objects were fragments of vegetation, resembling, in structure, hay and straw and hay seeds, and some extremely thin and transparent tissue showing no structure.

"A few hairs of leaves of plants and fibres, similar in appearance to flax, were seen; and, as might have been expected in this city, cotton filaments—some white, others coloured—were numerous, red and blue being the predominant colours. A few granules of starch, seen by the aid of the polariscope, and several long elliptical bodies, similar to the pollen of the lily, were noticed. After this dust from the atmosphere had been kept quiet for three or four days, animalcules made their appearance in considerable numbers, the monads being the most numerous. Amongst these were noticed some comparatively large specimens of *Paramecium aurelia*, in company with some very active rotiferæ; but after a few days the animal life rapidly decreased, and in twelve days no animacules could be detected.

"For the purpose of obtaining a rough approximation of the number of spores or germs of organic matter contained in the fluid received from Dr. Smith, I measured a quantity by the pipette, and found it contained 150 drops of the size used in each examination. Now I have previously stated that in each drop there were about 250,000 of these spores, and, as there were 150 drops, the sum total reaches the startling number of 37½ millions."

As it must be obvious that the atmosphere is constantly undergoing a washing process during a shower of rain, it is clear that rain-water must contain a liberal share of the solid contents of the atmosphere, whether organic or inorganic, and that the water, when kept, rapidly develops the organic germs present. Fortunately, various simple and efficient means of purification exist, of which, perhaps, none are better than the use of permanganate of potash. Mr. England, who has had considerable experience in the use of rain-water, gives his method, which may be thoroughly trusted, in our last Year-Book, which, for facility of reference, we here reproduce :—

"A simple way of purifying even London rain-water, which, in its natural state, strongly resembles diluted ink, is to procure a small funnel about four inches in diameter, and into the neck place a small lump of clean cotton wool, and which, when pressed tight, should be about the size of a walnut. Now fill the funnel nearly full of coarsely-ground animal charcoal, and on the top a layer of cotton wool about half an inch thick, and, to keep the whole in place, tie tightly two or three thicknesses of clean linen over the top of the funnel. To use this filter, pull over the neck of the funnel a small india-rubber pipe (one of a quarter-inch bore will do), and drop the filter into the vessel in which the rain-water has been collected, leaving, of course, the pipe hanging over the side, and which, on the air being exhausted, acts as a syphon. The impure water passing through the charcoal will be found sufficiently purified for most purposes in photography. Another advantage, a large supply may be procured at a very small cost. I have lately used some water filtered nearly twelve months ago, and found it quite good. I have also made several negative baths from water procured in this way, and which, in every respect, was quite satisfactory. Of course, the cotton wool and animal charcoal must be changed occasionally (say every two or three weeks, or oftener) if much impure water has passed through it. It may be asked, why not use an ordinary charcoal filter instead? I may say, in answer, that a filter made in this way is more satisfactory in its operations, its cost is only a few pence, can be easily renewed, and is so simple that any amateur in the most out-of-the-way place need not be without a useful filter."

SOME CHAT ABOUT CARBON AFFAIRS, PERSONAL AND OTHERWISE.

BY WILLIAM BLAIR.

Every succeeding spring seems to revive more or less the various questions connected with carbon printing. This is an indication that it is making some progress. This is surely desirable. It cannot fail to raise the character of the photographic art, for there cannot be the same inducement to bestow time, skill, labour, and expense upon things that we know must speedily fade away, as if we wrought in the confidence that our work might remain after we ourselves were gone. If it should still be thought desirable that many photographs produced in carbon should not last too long—a rather eccentric wish expressed by Mr. Bovey—the fire is always at hand into which they may be thrown.

Having now for a considerable time made the carbon process a sort of a hobby, I am naturally interested in every discussion that from time to time makes its appearance relative thereto, and of course I read with interest the article on Fargier's patent, and the letter by Mr. J. A. Spencer, and remarks thereon by the Editor, in this journal of the 25th March last. On reading these, and referring, also, to previous kindred discussions, I could not help thinking that the Autotype Company has been fortunate in their advocate, for their claims have been pled and their patents supported by all the skill and talent that it is perhaps possible to bring to bear upon the subject. The Editor of the News holds the conviction that these patents are valid, and in that case he is only doing his duty and aiming at justice in giving them the benefit of his able pleading. This, however, is an advantage that the general public have also reason to be thankful for. They thus learn all that *can* be said for the monopoly, and that is important.

I fancy the whole question now rests with the manufacturers. The Autotype Company have announced so liberal terms as to disarm hostility on the part of photographers. I hope they will find this for their own interest, and so give both a warning and an example to future patentees. I therefore leave Mr. Spencer and others to fight their own battles; but I have some little knick-knacks of my own to discuss with the Editor, and these, I suppose, we shall manage very well between ourselves.

In the first place, I observe that he assigns always to Mr. Swan the origination of the *idea* of aiming at the production of a *temporary* transparency of the paper in the processes in which sunning through the supporting medium is employed. In his remarks on Mr. Spencer's letter (p. 143 of this journal), he says :—"The processes in which paraffin, turpentine, &c., were employed by Swan in 1867, and by Blair and Pouncy later, differ from this original method of Blair in the fact that they all aim at producing a temporary transparency, whilst *neither to Blair* [the italics are mine], nor subsequently to Fargier, had this *temporary idea occurred.*" Mr. Swan's process with paraffin, originally published in 1867, is republished in last year's volume of the News, in connection with some remarks on my turpentine process, to show the identity of principle involved in these, and also in the process without transfer patented by Mr. Pouncy. Now it is not maintained that Mr. Swan's process was a very successful one, and it is evident at first sight, from the use of collodion and the subsequent removal of the paraffin by means of benzole, that it is a troublesome one. All that is inferred, therefore, is, that Mr. Swan was first in the field with the *idea* of temporary transparency.

Now I am to dispute this. The idea has long been familiar to my mind, and at an early period, when I was working with the waxed paper process—that was in 1859, 60—I recollect attempting to remove the wax, after the picture was developed, by means of warm turpentine—I was not then familiar with benzole—and I partially succeeded; but in removing the wax I found that I also partially removed the picture, for it was partly on the wax and partly on the paper. The result, therefore, as a process, did not warrant publication; and, so far as *this experiment* goes, I suppose I have no back-record to stand upon. But I had the curiosity the other day to look back a little among my papers of that period, and I found, after all, that I had given expression *in print* to the idea of temporary transparency. In a letter addressed to the *Photographic Notes*, and dated 4th March, 1859 (see p. 98 of vol. iv.), speaking of the granulation of the pictures then obtained, I wrote thus:—"I have satisfied myself that this granulation is due to the paper when printed from the back, because I have tried furrowed paper, and I find the granulation takes the form of the lines in the paper. Any substance, not of an oily nature, *that would render the paper semi-transparent like waxed paper, and again wash out*, would probably answer the purpose. I have tried a solution of gum in acetic acid, but only with partial success." It will be seen from this that the idea is to me a rather old one, and that at a pretty early period I made some attempts to turn it to practical account; but it was only comparatively at a recent period that the simple idea of using turpentine alone, imprisoning it for a little, till it did its work, and then allowing it to fly away of its own accord, occurred to me.

But there is another little matter adverted to in the letter by Mr. Spencer, and animadverted on by the Editor, rather of more importance, I think, than the above, as appearing to involve more serious issues, and, if I am not mistaken, going to the very root of the question in reference to Mr. Swan's patent. It is in no spirit of hostility to that patent that I am now to call attention to a little fact that in previous discussions I had quite overlooked, but which this more recent ventilation of Fargier's patent in some measure has recalled; and on looking back over the old papers above referred to, I happened to stumble upon the sentence which I am now induced to quote. But first let me point out that part of Mr. Spencer's letter in which, and the Editor's remarks thereon, the matter in issue is raised. Mr. Spencer refers to the *prepared paper*, which Fargier suggested might be used instead of collodion for lifting the gelatine film from the glass, and then he adds:—"If he (Fargier) had equally applied this to his paper, coated with 'one or more coats of the gelatinous solution before described,' we should at once have had a perfect single transfer process, as readily workable as any now employed." The Editor answers this, logically enough, no doubt, by emphasizing the "if." He says:—"Our correspondent suggests that *if* Fargier had gone a step further, he might have produced a good single transfer process. It has been well said there is much virtue in an 'if;' but as Fargier did not do this, which would have been a step in the direction taken by Swan, it scarcely affects the question," &c.

Now it so happens that what Fargier did not do, and did not suggest, was done by myself more than a year before the date of his specification in this country, which is said to be dated April 1861. I know that his method of working with glass and collodion was published in this country before then, for it led to a discussion between Mr. Sutton and myself in *February* 1861, as to the soundness of Fargier's principle of working, and which I felt called upon to support, as identical with the principle which I had myself adopted; and in my letter to Mr. Sutton, which is dated 5th February, 1861, and will be found at p. 62 of vol. vi. of *Photographic Notes*, I went very fully into the theory of printing, both from behind and before, and with a view to show, also, that Mr. Pouncy's plan, advocated by Mr. Sutton, could not be right, and would only retard advancement. Indeed, many of the views advanced in that letter were substantially repeated in a later communication by Mr. Swan to the London Photographic Society in 1864.

In the midst of all this it now appears that I had tried the whole *three* ways of printing. I began with Pouncy's; I next adopted sunning through the paper; and I also attempted a single transfer process, but, for want of rollers, did not persevere. Near the middle of the first column of p. 63 I wrote as follows:—"So satisfied was I long ago that this principle was correct (viz., sunning on one side and washing on the other) that about a year ago I commenced some trials of transferring the carbon, after exposure, on to gelatinized paper, with the view of preserving the impressed surface, but, for want of some mechanical means which I thought necessary to success (these were rollers), I did not persevere; but I think this may still be done. It gets quit of the granulation caused by a semi-transparent medium superposed."

Here, then, I think, we have what Mr. Spencer desiderated in Fargier's patent, and of an earlier date, viz., a single transfer process in embryo, merely requiring some manipulatory experience to produce presentable results. I have a distinct recollection of obtaining pictures by it of some promise, but, not being exceedingly hopeful of it at the time, nor sufficiently patient, I generally tore some part of the picture in separating the papers. This, and the want of the rollers for joining them smoothly together, and want of familiarity at the time with other manipulations that would have answered as well, induced me to suspend these operations at that period. However, what I am now disposed to submit is this, that sufficient was published at the time to suggest and show the practicability of a transfer process with the tissue then in use, and I cannot yet see in what essential particular Mr. Swan's paper tissue differs, for the purposes of transfer, from that of Fargier's or Poitevin's, or some that was used at that period by myself, except that it is made more expressly with a view to transfer, and for no other purpose. It is said that Mr. Swan introduced a *distinct tissue*, which permitted of exposure to light on one side, and then allowed, by a simple method, exposure to hot water on the other side. In so far as this applies to his collodion tissue it may be true, and I suppose no one disputes that point; but in so far as it is meant to include his paper tissue, I cannot but dispute it. Mr. Spencer, some short time ago, sent me some tissue made on thin paper, that I might try it in my turpentine process. The paper was specially got for one of Mr. Pouncy's oil processes. I have no doubt that tissue on thin paper was substantially Fargier's paper tissue. It answered very well for my turpentine process (though, certainly, I had made some tissue myself that answered rather better), but the paper was somewhat spongy, and absorbed so much bichromate that it could only be sunned in a strong light. The consequence was, that when I prepared some of it over-night for exposure next morning, if the morning proved sunny and bright, I applied the turpentine and exposed, but if dull, I at once exposed on the face of the gelatine, and transferred the print. Wherein, then, I ask, once more, does this tissue differ in any essential particular from Mr. Swan's, seeing it can be used for the very same purpose, though, possibly, not manufactured expressly for that purpose?

I hope these are only matters of fair discussion. In the accumulation of photographic literature, it is no wonder that old hints, and suggestions, and operations are lost sight of. It would be surprising if it were otherwise. It was only by a kind of accident that I have succeeded in digging up the above reminiscences of former experiment, and I hope the reference to these at present may not be considered obtrusive.

I had some other small matters to talk to the Editor about, but this paper is getting lengthy, and I must adjourn the present diet.

Bridgend, Perth, April, 1870.

NOTE ON CARBON PRINTING.

BY M. DUPUIS.*

The method of printing which I am about to make known, and which I have employed for some time, is, I believe, one of the simplest and most certain that has ever been devised, and I communicate it in the good cause of progress, merely soliciting your kind attention, gentlemen, for a short time in order to do so.

I prepare, in the first place, a three per cent. solution of bichromate of potash, into which I immerse a sheet of the pigment tissue of M. Marion's manufacture, the prepared surface downwards. I allow sufficient time to elapse for the tissue to bend inversely, a certain proof that the bichromate solution has perfectly saturated the tissue. An ordinary sheet of paper is then plunged into the same bath for about a like period, and both are allowed to dry separately in a dark locality.

When I wish to commence printing, I take a stereoscopic negative, in which the two images are identical, and place it in an ordinary printing frame, one half of it being provided with the sensitive pigment tissue, and the other with the ordinary paper simply coated with bichromate. The frame is exposed to light, and as soon as the half tints appear perceptibly upon the ordinary paper, I at once withdraw my negative from the light, quite convinced that my tissue has been sufficiently exposed. I am thus enabled to pursue my printing operations without the aid of a photometer; if pressed for time, however, and I desire to make use of both sides of my negative, I expose a photometer at the first printing of a negative, and notify the number given, and this afterwards serves as a guide for future printing.

If I have in my series several *cliches* of the same number, I take one as a type, and provide it only with paper simply bichromated; in this manner I can print the whole series more easily than with silver paper, for I have nothing to do but to place them altogether in the sun, and withdraw them as soon as the half tints of the pattern negative warn me that the whole have been sufficiently exposed.

In this manner no time is lost, the exposure is always exact, and there is less chance of failure; nevertheless, a photometer is always useful in photography, in order to classify the negatives when working according to my system. When a negative shows an interval between two numbers of the photometer, I institute a new series, and employ a negative of the same class, to control the printing.

If the printing is carried on with single negatives, I provide some of them with simple bichromate paper only, and expose the whole set to the action of the light, following their progress and examining them now and then. As they are printed one after another, I affix a number, classifying them together when possible; after the first experiment I use them one against the other as photometers, providing one of the series always with a piece of simple bichromated paper, while the others are furnished with the ordinary tissue.

In the production of enlargements my *modus operandi* is similar. I coat my negative in the first instance with a very weak solution of gum, in order to preserve it from danger, and so that I may be enabled to print off one proof upon ordinary bichromate paper. A photometer is exposed to light at the same time as the negative, and as soon as the half-tints appear upon the bichromate paper, the number indicated by the photometer is noted. When the *cliche* is enlarged, I place this photometer in the apparatus at the same distance as the sensitized tissue, and as soon as the number previously indicated is arrived at, the exposure is complete.

I have carefully studied this method of printing in the sun, in diffused light, and also in a partially darkened apartment, where a negative requires a day for printing. All experiments without the photometer were made separately, and irrespective of the age of the paper, whether freshly prepared or after a lapse of ten days; and as in all cases the amount of exposure was rightly timed, it follows that the appearance of the image is a certain proof of sufficiency of exposure.

CHLORIDE OF ALUMINIUM AS AN ACCELERATOR IN COLLODION.

BY M. LOUIS TERRAGNO, OF PORTO-ALEGRE, BRAZIL.*

As far as I have been able to form an opinion from the journals which have reached me in this country, the employment of chloride of aluminium, either for sensitizing paper or collodion, has not been resorted to by photographers. For this reason I take the liberty of bringing the compound to the notice of my brother operators, in case they may feel disposed to give it a trial, having observed that the chloride in question yields a very fine grain, and that paper sensitized with it prints more rapidly than when the chlorides of sodium, ammonium, &c., are used.

By adding four or five drops of a solution of chloride of aluminium to fifty grammes of collodion prepared with iodide and bromide of cadmium, the sensitiveness of the collodion is increased to such a degree as to render it suitable for taking instantaneous pictures; unfortunately, however, collodion thus prepared does not keep good for any time. The chloride of aluminium employed is made by attacking aluminium with hydrochloric acid, and subsequently evaporating to dryness. It is applied to paper in the form of a four per cent. solution, and added to the collodion as an alcoholic solution prepared by dissolving ten grammes of the chloride in one hundred grammes of alcohol.

This chloride allows of the preparation of so-called cardboard enamel prints, and yields impressions on the surface as vigorous as albuminized paper, only it is necessary that the silver bath should be of twenty-five per cent. strength. A rapid collodion of very good preservative qualities may, I have found, be manufactured with a sensitizing liquid compounded as under:—

Alcohol	200 grammes
Iodide of cadmium...	12 ,,
Iodide of lithium	4 ,,
Iodide of sodium	4 ,,
Bromide of cadmium	4 ,,
Chloride of magnesium in solution	25 drops.

Ten cubic centimetres of this solution are added to every hundred grammes or cubic centimetres of collodion.

The chloride of magnesium solution is prepared by dissolving ten grammes of chloride in one hundred grammes of alcohol, the chloride being obtained in the first instance by acting upon magnesium ribbon or wire with hydrochloric acid.

In making some chemical experiments with the juice of the tapioca, a plant very abundant in this country, I have been successful in obtaining an acid which may be used in photography in place of acetic acid in the developer; this tapioca acid induces very vigorous development, and, in many cases, renders intensification unnecessary. It is obtained by saturating carbonate of soda with tapioca sap, and evaporating to dryness, and subsequently treating the product thus furnished with concentrated sulphuric acid, and distilling the liquid.

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* Read before the French Photographic Society.

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TONING IN THE FIXING BATH.

A writer in one of the photographic annuals having recently recommended removing prints from the acetate and gold bath before the toning is completed, and then immersing the print in a fixing bath to which a little chloride of gold has been added, asserting that a richer tone is thus obtained than can be secured in any other way, Mr. H. T. Anthony, in the last number of the *Bulletin* issued by his firm, after quoting the article, has the following remarks :—

"We publish the above process of Mr. Ayres [the writer of the article referred to] for the purpose of cautioning photographers as to the use of such a process. In our long experience in printing we have tried so many experiments that we every now and then find an old acquaintance appearing in the pages of one or other of the journals. We are familiar with, and have often used, a similar process; but we have always taken pains to make the hyposulphite bath alkaline, and to add to it only a little of an alkaline solution of gold. If this precaution be not taken, there is very great risk of having pictures with discoloured whites.

"A very excellent toning bath may be made by using hyposulphite of soda which has been rendered at least neutral, if not alkaline, by means either of pure carbonate of baryta, or by the addition of air-slaked lime. One effect that is produced, especially by the lime, is to prevent entirely the nauseous smell which always is produced upon immersion of prints in the fixing bath. The gold can easily be neutralized by making a strong solution of it, to which pure precipitated carbonate of baryta is added. The operation of the baryta is slow, it sometimes taking, at ordinary temperatures, three days before the action of the baryta is complete. Without taking another precaution, however, good prints cannot be produced by this bath. That precaution consists in removing as far as possible, by washing, the free nitrate of silver. To effect this, the prints should be subjected, after the ordinary washing, to a good soaking in hot water.

"Prints thus treated tone in the above bath with great ease, and to any degree of depth. I have recently examined some made more than two years ago in this manner, and find them perfect, and not showing the slightest change.

"But however capable one may be of producing good prints by the hyposulphite bath, there is undoubtedly always an element of uncertainty about them, and we would advise our readers to stick to the good old alkaline bath, and would suggest, in addition, that one of the greatest aids to good, easy, and economical toning, is the use of weak acid-wash before toning. As some of our readers may not have met with this formula, we explain it.

"Our practice is as follows :—One fluid drachm of acetic acid, No. 8, is mixed with a quart of water. Into this weak solution the prints are immersed, either without previous washing, or after having been once soaked in water. They are allowed to remain a quarter of an hour, and then are rinsed twice more, and are then ready for the toning bath. Other organic acids may be used, care being taken to make the solutions very weak."

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GATHERED FRAGMENTS.

BY DAVID DUNCAN.[*]

Casting my mites from time to time into the treasury of photographic knowledge, I feel inclined to swerve from the beaten track of formulas for collodions, developers, &c., being thoroughly imbued with the conviction that the best results are obtained by the simplest means. It would not be wise on my part, however, to say we have collodions enough, developers enough, intensifiers enough; for, doubtless, there is gold remaining in the old lode yet.

But to the point. I generally jot down any fragments of information I come across, which I think may be of service to the photographic art. I here give a few of them from various sources, hoping they may be useful (*sine die*) to the reader who is unacquainted with them.

1. I am indebted to a gentleman named Wright, an ingenious member of our profession, for the following simple but practical idea. Many photographers, when making albumen solutions, either for coating glass plates, dry-plate work, collodio-chloride, &c., spend much time in effecting a combination between the white of egg and water by beating the whole to a froth. Mr. Wright's plan is to put some broken pieces of glass into a clean bottle with the albumen and water, shake a few minutes, and filter. The broken glass speedily "cuts up" the albumen, thus rendering the *modus operandi* simple and effective.

2. Chloride of copper completely removes, even from coloured woven cotton tissues, stains occasioned by nitrate of silver. They require, however, to be washed afterwards in a solution of hyposulphite of soda. From white calico or linen, nitrate stains are more readily and effectively removed by applying a dilute solution, and rinsing in plenty of fresh water. By the above means, cyanide of potassium, so highly poisonous, is rendered unnecessary, and, let me add, may possibly be a good substitute for cleansing the hands from nitrate stains.

3. By adding a few drops of liquid carbolic acid to iodine tincture, the latter does not stain.

4. The following makes a rapid drying cement, and may be useful in the laboratory :—

Amber	1 part
Bisulphide of carbon	1½ parts

5. An indelible and good black ink is of service to the photographer; the following is excellent. Grind aniline black with a mixture of sixty drops of concentrated hydrochloric acid and one and a half ounces of alcohol, the resulting liquid to be diluted with a hot solution of one and a half drachms of gum arabic in six ounces of water. If one and a half ounces of shellac, dissolved in six ounces of alcohol, be substituted for the gum, the composition is suitable for blacking leather, wood, brass, &c.

6. Prof. Scherer, of Frieberg, Saxony, suggests a simple method for purifying water. It is based upon the property that a neutral solution of sulphate or peroxide of iron has for decomposing organic matters. It is thereby converted into a basic insoluble salt, which carries the impurities with it to the bottom. This suggestion may be of use to the photographic chemist, and, therefore, not out of place in this journal.

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ON THE SOURCE OF THE DIFFICULTIES PRESENTED BY THE COLLODIO-BROMIDE PROCESS.

BY M. CAREY LEA.[*]

Some years ago, whilst experimenting with various dry processes, I recognized in the collodio-bromide a capacity for giving a certain indescribable harmony of effect that no other dry plates seemed to yield. I do not think that the nature of this action has ever been truly described; it is commonly said that bromide of silver does not easily solarize, but that is only a part of its merits. The truth is, that the effect of light upon bromide of silver seems to spend itself, if I may so express it. After a time, its action proceeds at a slower rate. If it solarized, then the highest lights would be less dense than those just not solarized. If the action stopped short after a certain extent, then the lighter half-tones would overtake the high lights, and so greatly injure the general effect. But the gradual slackening of the action, without cessation of it, enables the collodio-bromide process, when well managed, to render contrasts in a way that no other dry process that I have ever used is capable of doing.

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[*] *Philadelphia Photographer.*

[*] *Philadelphia Photographer.*

This priceless advantage has caused me to adhere steadfastly to this one process, of which I have tried innumerable variations. Like all those who have tried it, I have been annoyed at times by the plates failing, and when one plate has done so, generally the whole batch did likewise. This seemed to point to some essential error in the received method of working the process.

In the introduction of a chloride into the collodion I found a material gain. Since I wrote the paper in which I described that innovation, and which was published a few months ago, I have carried on an uninterrupted series of experiments. At last I have reached the secret of the whole difficulty, and have found its complete cure. To make the collodio-bromide process work with regular success, it is necessary to add an acid, preferably a strong mineral acid, to the collodion.

This may seem at first an extraordinary proposition, but upon examination it will be found right, theoretically as well as practically. In the wet process we have often acid in every stage of the work. The collodion is acid, or, at least, contains free iodine, which is virtually the same thing; the bath is generally acidified; and the development is usually acid also. Now it is well known that bromide of silver bears acid very much better than iodide; that is to say, that the introduction of a bromide into the ordinary collodion for the wet process enables the bath to be acidulated without loss of sensitiveness, which was not the case when simply iodized collodions were used. With the total exclusion of iodide of silver, of course the capacity to bear acid is increased. And yet we have committed the absurdity of trying to work the collodio-bromide process with purely neutral materials, thus making it a solitary exception in the whole range of collodion methods. Even in the bromide process with a bath, acid is used, and very liberally; in fact, more so than in any other process, wet or dry.

The negatives afforded by the acidified collodio-bromide process are remarkably beautiful in appearance. They are beautifully clean, show the details even in the high lights, when viewed as positives by reflected light, held before a dark background. Very deep shadow, such as an open window, is represented by clean glass. The high lights, when the plate is looked at by reflected daylight, have a peculiar metallized coppery look. The back of the film, as seen through the glass, is just as clean and brilliant as the front.

The acid which I use in preference is *aqua regia* in its active state. It is only necessary to mix in a stoppered vial an ounce of ordinary nitric acid and two ounces of ordinary hydrochloric acid, and to gently warm the bottle until the acids react upon each other, and the mixture passes into its active state by formation of chloronitrous acid. This is indicated by the liquid becoming orange colour, and by the formation of small bubbles of gas in it. The stopper is then put in, and the bottle set aside for use. A convenient way to apply the heat is simply to set the vial on a stove. The proper proportion is one to two drops to the ounce of collodion. A considerable amount of experience will be necessary to decide which is best; at present I incline to one drop to the ounce, but have at times used two very satisfactorily. The best way to apply the acid is to drop it into a very small porcelain capsule, and then turn into the collodion bottle as much as will run off. To get the rest in, pour a drachm or two of the collodion into the capsule, and back again; at first there will be a gelatinous drop formed, but by repeating the pouring six or eight times this will re-dissolve, and the whole of the acid be transferred. The time of acidifying seems not to be very important; I have sometimes added the acid immediately before sensitizing, and sometimes a month before; in both cases with good results.

The effect of the acidifying is extremely marked. The excess of nitrate of silver, which before could not be brought into actual solution without fogging, has no longer any such tendency. This I have tested critically by dissolving the whole of the nitrate of silver beforehand, and then keeping the materials for a day, or even two days, in contact, with frequent shaking. Even with this treatment the negatives came out perfectly clear and bright, without the use of bromide in the development. Indeed, it is doubtful if that agent will ever be necessary; at least, so far in my numerous experimental plates I have never employed it.

It seems proper here to guard against a very obvious mistake, which, nevertheless, occurred on a previous occasion. I do not suppose that the use of acid would be of the slightest benefit to those who work the collodio-bromide process with excess of bromide, nor was the chloride of copper intended to be so used.

In order to measure the value of this new method I have carefully tested it against—1st, My former process; 2nd, Mr. Dawson's process; 3rd, Major Russell's rapid bromide process.

1. Compared with my former process this possesses almost, if not quite, the same sensibility, gives clearer negatives, and is more certain.

2. Compared with Mr. Dawson's, its sensitiveness is materially greater than that of plates prepared by his method. These last are bright and clean, but the acidified collodion gives plates still brighter and cleaner. The difference in the amount of manipulation is also very important. Mr. Dawson is obliged to wash out the excess of bromide with extreme care to attain only a moderate sensitiveness. In my new process, as in my former, leaving the plate for ten minutes in a pan of water is quite sufficient. Nor is distilled water needed, but common river water or spring water answers every purpose.

3. Compared with Russell's rapid dry process the new method gives clearer and brighter plates with a sensitiveness nearly equal. Here the difference of manipulation is enormous. I think I am within the mark in saying that in any given time at least three times as many plates can be made by my process as by the "rapid bromide," and, plate for plate, I prefer the collodio-bromide.

The following are the manipulations:—

Collodion.

Ether	20 fl. ounces
Alcohol...	12 „
Intense pyroxyline	162 grains
Bromide of cadmium	320 „
„ ammonium ...	64 „

Add half the alcohol to all the ether, and shake up with the pyroxyline; throw the salts into a flask with the rest of the alcohol, and heat till dissolved; add to the other portion, shake up well, and place in a warm, light place for three weeks; it will be better still in two or three months.

This collodion will require sixteen grains to the ounce of nitrate of silver to sensitize it. I prefer, and always use, fused nitrate, and recommend it for all collodio-bromide work as much preferable to the crystallized.

Having measured out the quantity of collodion to be sensitized, weigh out sixteen grains of very finely-powdered nitrate of silver to each ounce, throw it into a test-tube or flask, and pour over it alcohol of 95 per cent. in the proportion of one drachm to each eight grains of nitrate; boil for a few minutes, and the nitrate will dissolve; pour it now in successive portions into the collodion, shaking up well after each; shake about five minutes after the last portion is added, and every few times thereafter; use twenty-four hours after sensitizing.

I have, at various times during the past years, used this method of introducing the whole of the nitrate in actual solution. In the collodio-bromide process, as originally described by Messrs. Sayce and Bolton, it is not appropriate, because in that process the whole of the silver must not be in actual solution. But in this present acidified process it is desirable to have the silver altogether in solution; in fact, this point makes an extremely wide difference between this process and any other that has been hitherto described.

In twenty or twenty-four hours after sensitizing the mixture will be in condition to use. The difference of a few hours will not be important, but it is best not to exceed twenty-four. If kept too long there will be a disposition to fog in the shadows, and a want of brilliancy in the whole picture. The high lights, also, will not have their details well marked. The filtering is best done by putting a piece of soft, clean sponge in the neck of a funnel, and cutting a small circular filter of close-woven linen. The linen used for making these filters should be boiled for an hour with very weak caustic potash or soda, then well washed in hot water (of course without soap), and dried. This plan of filtering will be found excellent for all sorts of photographic collodions. Before filtering, the collodio-bromide mixture should rest quiet for two or three hours after its last shaking.

For the preservative bath I recommend exclusively the two following, either of which give good results:—

Litmus Preservative.

Cover a quarter of a pound of good litmus with hot water; set a basin or plate over the bowl, and put in a warm place for a day; throw the paste upon a filter, and pour on hot water till the filtrate amounts to a quart (the filtration is slow); add a drachm of carbolic acid, and the litmus solution keeps good indefinitely.

Litmus solution	1½ ounces
Water	6 ,,
Gum arabic	90 grains
Sugar (fine white)	90 ,,
Acetic acid (No. 8, or Beaufoy's)	25 minims.

The above quantity makes a convenient bath for a 6½ by 8½ plate.

Throw the collodio-bromized plate into a pan of water until the greasy marks are gone, and then pass it into this bath, where it will remain, with occasional agitation, about ten minutes. The time is not important; five minutes will be sufficient; fifteen will do no harm.

Tannin Preservative.

I have lately got good results with tannin by reducing the proportion greatly below what is ordinarily recommended. By so reducing it I retain the beautiful variety of half-tint which is characteristic of gum, and which is greatly injured by using the ordinary quantity of tannin. I take—

Water	7½ ounces
Gum arabic	90 grains
Sugar	90 ,,
Tannin	15 ,,

The tannin is here used two grains to the ounce. The washing of the plate is the same as above.

The litmus gives the softest and most sensitive plates, but needs an intenser cotton. The latter of the two preservatives will work well with a wider range of pyroxylines than the former, and give a brighter picture. The tannin is the easiest to succeed with, but the litmus, when well managed, undoubtedly gives the best negatives. In either case the negatives are very beautiful; better looking or better printing negatives cannot be got with the wet process.

Development.

Prepare a sixty-grain alcoholic solution of pyrogallic acid and a forty-grain solution of ordinary carbonate of ammonia in water.

To five ounces of water add half a drachm of the pyrogallic solution and a drachm of the carbonate ammonia. Agitate the pan to mix them well, raise one end, and put in the plate in the ordinary way. No washing or application of alcohol is needed. When the image is pretty well out, but thin, add another drachm of the ammonia solution, and density will quickly come.

Bromide of potassium in the developer I have so far found wholly unnecessary. Nor will a redevelopment with silver be necessary, unless, perhaps, when some great mistake has been made in the exposure, which, with a good light, will be the same as for the wet process; but where the light is poor, or the contrasts great, the exposure will need to be prolonged.

The above directions will probably be found sufficient for working the process. I am still endeavouring to improve it, if possible. I judge that the method of keeping the residues over, which I have always found useful in the other modifications of collodio-bromide, in order to obtain dense opaque films, will be also valuable here, but have not as yet sufficiently tried it. I am also about to examine the applicability of hydrobromic acid, with or without nitric acid, to the collodion, instead of hydrochloric. I scarcely expect, however, that it will prove advantageous, as the introduction of chloride of silver into the sensitive film is a decided advantage, as I have already proved in the case of chloride of copper. The aqua regia here recommended may be used either as a substitute for the chloride of copper before proposed by me, or in conjunction with it. Either way has given me excellent results.

In conclusion, I may say that I have never found any photographic process so pleasant to work as this. The tedious washings after coating the plate, which consume so much time in some other processes, are here done away with; the plates are made easily, rapidly, and with great regularity. The two conditions of success are, to use a very intense cotton, and, at the same time, one which will make a very easy flowing collodion, for want of which latter quality mottled skies may result. The plates should be fixed in very weak hyposulphite, never in cyanide.

PLAIN PAPER WORK.

BY M. K. SUTLIFF.

An improved plan for working plain paper capable of producing effects equal to albumen.

Salting Solution.

Chloride of ammonium ...	1 ounce
Muriate baryta	¼ ,,
Pure water	120 ounces
Cox's gelatine	1 tablespoonful.

Dissolve the gelatine in part of the water warmed in an earthen dish, add the salts, afterwards the balance of the water; immerse the paper, one sheet at a time, being careful to cover both sides, until you have four sheets immersed; then turn them all over. Commence taking out, beginning with the first one put in.

After the paper is thoroughly dry, lay a sheet on a table that is perfectly clean (a piece of common paper underneath is best); silver with a small ball of cotton with the following silver solution, commencing in the middle of the sheet:

Silver Solution.

Nitrate of silver	1 ounce
Water	7 ounces.

Ammoniate until clear six and a-half ounces of the above (this must be done carefully); then add the remaining one-half ounce of solution, and filter.

Toning Solution.

After the print has been well washed, tone in an old gold and carbonate bath that is very weak; let the print remain in the solution until it gets to a settled red; the deeper the red the darker the tone. Wash again, and fix.

One thing must be borne in mind: never add fresh gold to the bath unless it is one or two days before wanted for use. Do not print much deeper than you wish the picture to appear when finished.—*Humphrey's Journal.*

Correspondence.

COMMERCIAL DRY PLATES, ETC.

Dear Sir,—I am rather surprised that while different dry processes are so frequently described in your valuable and interesting paper, the Birmingham dry plates, which are so convenient for amateurs and others, should be so seldom alluded to. With your permission, I should like to speak a few words in their favour.

First of all, I may here mention that I have worked these plates, those of the ordinary rapidity, for nine years, and have taken hundreds of negatives with the greatest satisfaction and comfort to myself, and, with the exception of one single box of plates, which arrived prepared with a faulty collodion, but which Mr. John Norris, who superintends the preparation of these plates, most promptly replaced, I never yet had a bad plate. Any fault can be directly traced to wrong exposure or hurried or unsuitable development. The advantages I claim for my favourites are, great keeping powers, fair sensitiveness, exquisite delicacy of detail, and great tenacity of film. With regard to the first virtue, I may remark that I have frequently kept these plates for twelve months, and got a fair picture; and I have now by me six or seven 7 by 5 plates, the remains of a batch which furnished me with some beautiful pictures in August last year. One of these plates gave me a capital negative of a church a few days ago, and, I doubt not, the others are as good. They are not so rapid as collodio-bromide, but quicker than collodio-albumen or plain tannin, and, when developed in the following manner, which differs a little from Mr. Norris's working formulæ, they gave most beautiful clean negatives, full of detail, with a sky that never requires stopping out, unless to hide some objectionable feature in the picture:—

Moisten the plate with filtered rain-water; distilled is never required. I use a Lipscombe filter, and keep it full as required. Next apply the following:—

Pyro	3 grains
Citric	2 „
Filtered rain-water	1 ounce.

My plates take four drachms of this solution, to which I add one single drop of a thirty-grain nitrate solution. This generally brings out all the detail; but sometimes another dose of the same strength may be required. Intensify with the same solution, but this time add four drops of silver; repeat the dose, if necessary, till the requisite density is reached. Fix with hypo, using a dipping bath for the purpose, with rather a weak solution, for the plate can be left in till the next plate is ready for fixing; thus there is little loss of time. Give the plate a frequent rinse during development, which prevents all deposit, and keeps a clean sky, and, of course, wash well before and after fixing. Dry by heat, or spontaneously.

I find it convenient to keep some powders of pyro and citric ready weighed out (very pure white paper can be got from any chemist of repute), and the powders must be kept in a dry place. Make the pyro powders twenty-four grains, and the citric sixteen grains. This will make eight ounces of solution. Common tumblers, such as marmalade is sold in, come in very handy for mixing solutions in, and are very cheap, and a scratch or two can easily be made with a diamond to show the ounces and half-ounces. Photographers who like the sweets of society and use marmalade should buy theirs in their tumblers.

The powders I find keep any length of time if quite dry, and I do not find the discolouration of white paper, which takes place in a month or so with the pyro, to have any injurious effect. Two of these powders dissolve directly in eight ounces of water, which can be then run through a bit of sponge in a funnel. This plan saves time and trouble. The development of these plates is very simple; no coloured backing to remove; no trouble with alcohol and water which has to be washed off. Altogether I think this the perfection of simplicity, and most suitable for beginners.

From some reason or other—and I am loth to think it is stupidity—I have most signally failed with alkaline development, and so have other industrious workers in this neighbourhood. I can make nothing of it, so have given it up.

I notice that everyone recommends coloured backs for those varieties of dry plates that are liable to blurring. I consider this a dirty and troublesome plan, and think that dead black paper is much better, easily applied, and easily removed. Prior to development the plate should lie for a minute in a dish of rain-water, when the paper detaches itself. It is not a bad plan to back all dry plates with this black paper, when rough.

Remarks about the subject.—The simple word "exposed," or "not," can be scribbled acro s the paper; this may save mistakes, particularly when the period of a month elapses between exposure and development. These plates will keep amply for this length of time, and, if non-exposed, one may calculate, as I said before, on getting good pictures from plates a twelvemonth old. I recommend anybody purchasing these dry plates to get them in quantity, say twenty-five or fifty. Sometimes there might be a smash when the plates are packed in the ordinary way, a dozen in a case, not from any fault of the packing, but while in transit, when, if one plate was broken, the surface of many of the others might be scratched.

To keep a quantity of plates, use a common varnished pine plate-box with a good lock and key, put a piece of *spongis piline* in the lid, which will prevent rattling, and wrap the whole in a bit of india-rubber cloth, or of an old worn-out mackintosh; they are thus air and damp proof.

Apologising for a long and prosy letter, I remain, yours very truly,
Salopian.

Ticklerton, Church Stretton, Salop, March, 1870.

IN THE MATTER OF PAUL PRETSCH.

Sir,—Your contributor, the "Old Photographer," seems inclined to question my statements respecting Mr. Paul Pretsch, and deprecates my attack, on the ground that Pretsch is not on the spot to defend himself. You, Mr. Editor, are well aware that I have not now for the first time expressed my convictions that Mr. Pretsch was a pretender, and that he was not the inventor of the process which goes by his name.

Those who know me best can testify that I am not given to detraction. I should be sorry to blast any man's name or fame; but the present discussion was none of my seeking. It originated at the late meeting of the Photographic Society; and it was only when I was appealed to by the secretary (Mr. Spiller) for facts, that I wrote what I did. I am prepared to swear to the facts, and to produce witnesses who can prove the utter groundlessness of Pretsch's pretensions.

The absence from this country of Mr. Pretsch ought not, I think, to hinder an examination into his claims. If those are baseless, I do not see that any interest of truth is served by bolstering up his reputation. Besides, although he pretended to me never to have seen the Journal of the Photographic Society, or any other publication describing Mr. Fox Talbot's process, yet he has always been a reader of the English, French, and German photographic journals.

In your contemporary, the *British Journal of Photography*, Mr. Courtenay, who attacks me pretty sharply, appears to have been informed that Mr. Pretsch is dead. If authentic, this is news to me; he was alive not very long ago. Your contributor, the "Old Photographer," writes as if Pretsch were still living. But even if Pretsch is dead, I cannot see—unless I am proved to have trumped-up false charges—that *facts* are true only when a man is alive, but change to *falsehoods* when he is dead. What I have written can be read all over the photographic world. I never put pen to paper without thinking of the Roman proverb, *Litera scripta manet.*

Again. The "Old Photographer" seems to adhere to the belief that plates and blocks were produced by Pretsch which were untouched, and yielded *good* prints, the blocks—as he states—even undergoing satisfactorily the ordeal of machine printing. I ask, where are these wonderful plates and blocks?

"Apparent rari nantes in gurgite vasto."

No; they never even swam; they sunk useless to the bottom, taking with them "a power" of good money.—I am, yours truly,
Duncan C. Dallas.

FEMALE LABOUR IN THE STUDIO.

Sir,—I perceive "Photo" is not aware that women are employed in photography, and that you are doubtful whether it would be advantageous for them to operate in the studio or the dark room. "Photo" may rest assured that it is practised by women, and that not only in reception rooms and touching-out.

After assisting my husband for some time in his business in all its branches, I have for the last three or four years had the sole manipulation to attend to personally, owing to my husband's health failing.

I have now the best studio in this neighbourhood, 21 feet by 9, with 6 feet of glass on each side, carried over the top. The sitter faces north-west. I use Mawson's collodion and developer, fix with cyanide, and use Ross's No. 2 lens. My prints are not so vigorous as I could wish. Perhaps you could give me some information how to produce them better. I enclose a few specimens as samples.

We have taken your News nearly from commencement, and have found it exceedingly useful, as well as your Year-Books.—I am, sir, yours respectfully, A Working Woman.

Pontypool, March 31st, 1870.

[We are glad to report that the specimens enclosed by our correspondent are average good work.—Ed.]

Proceedings of Societies.

French Photographic Society.

A meeting of the Society was held on the 4th ulto., M. Davanne in the chair.

The President announced the death of MM. Fierlants and Bingham. The former gentleman had occupied himself principally in the production of work of the Dutch and Flemish school, and was noted at all exhibitions for the excellence of his pictures.

M. Harrison forwarded a photograph of the late M. Bingham, and the President requested all members to send in their own portraits as soon as possible, so that a complete and interesting collection might be formed. The *cabinet format* has been fixed upon as the most suitable size.

M. Stuart Wortley presented the Society with some of his instantaneous sea and cloud sketches.

M. Laulerie announced that the number of applications sent in for space for pictures for the forthcoming exhibition had been very numerous, and a successful meeting was therefore anticipated.

M. Louis Terragno communicated a note on the employment of chloride of aluminium in collodion (see p. 160).

Several members of the Society observed that the application was not novel, but had been described by M. Paul Zeuffrain.

M. Davanne made some remarks on the employment of acetone in varnishes. At a recent meeting of the Society M. Franck de Villecholes referred to an accident which had befallen him lately, in which the film of certain negatives had been dissolved by the varnish. M. Davanne attributed the cause, at the time, to the peculiar character of the pyroxiline employed in the preparation of the collodion, but, being ill-satisfied with this reason, had investigated the matter further, and was now of opinion that the phenomenon observed by M. Franck de Villecholes was due to the existence of acetone in the wood spirit with which the varnish had been prepared. Accepting this idea, M. Davanne had attempted a few experiments in the direction indicated, and had found that by adding to a varnish a quantity of acetone not amounting to more than twelve or fifteen per cent., the dissolution of the film was at once accomplished. The accident may at any time be prevented if the preliminary precaution is taken to gum the negative.

M. Marion submitted some further samples of prepared and sensitized carbon tissue.

M. Davanne announced that it had been unanimously resolved to re-elect M. Balard as President for the ensuing year.

M. Dupuis communicated a note upon carbon printing (see p. 160).

M. Marion also read a paper on some points connected with the preparation of carbon prints. He described a method of obtaining, by means of carbon printing, a transparent negative upon glass of a reverse character, from which positive pictures might be printed without transfer. He also stated that he preferred his tissue manufactured with two coatings of material, the first film applied to the paper being composed of coloured gelatine, and the second of pure colourless gelatine only. By the action of light, the outside colourless film becomes perfectly insoluble, and formed an even and uniform basis for the image.

M. Poiree addressed a letter to the Society on the subject of heliochromy. He called into question the truth of the theory of superposition adopted by MM. Cros and Ducos in the production of their heliochromic reproductions, and discussed at some length the methods of obtaining the various tints.

M. Ducos du Hauron addressed the Society on the same subject. He had just completed a pamphlet on the production of heliochromic prints, and had made some progress since he communicated his first statement to the Society. He submitted further examples of the process to the members of the Society, which had been prepared by three sheets of mica of various tints superposed one upon the other. In future it would be possible, by employing M. Marion's transparent pellicles, to dispense altogether with a mica or glass support. Practical details for working his process will be contained in M. Ducos's new work.

The Society thanked MM. Poiree and Ducos du Hauron for their communications, and decided that the subject of heliochromy should be considered by a separate committee, composed of MM. Becquerel, Davanne, Girard, and Jeanrenaud.

M. Poiree forwarded a communication on the production of reliefs by means of a photographic *cliche*. One of M. Poiree's methods is to enclose the object to be copied in a case having a glass front, through which the image is obtained. The case is filled with a white vapour of a certain transparency, and the object illuminated by means of electric or magnesium light. A photograph is then obtained, which is not so much a reproduction of the object so much as of certain thicknesses of vapour in front of the same, a mould of the haze being, in fact, obtained. By printing upon bichromated gelatine a true relief is obtained, which is by no means the case with a negative taken in the ordinary way, where the shadows convey a false impression. The same object may be attained by surrounding the model with a liquid of a certain tint, but the result is not so perfect, in consequence of the diffusion and reflection of the light.

The Society thanked M. Poiree for his communication.

The proceedings then terminated.

Bristol Photographic Society.

The annual meeting was held on the 24th March, 1870, Mr Ennel, V.P., in the chair. Mr. Seed was elected a member of the Society. The meeting proceeded to the election of officers for the ensuing year. The Bishop of Gloucester and Bristol was unanimously re-elected as president; Mr. Beattie and Mr. Ennel were re-elected as vice-presidents; and Mr. W. H. Warner was elected as vice-president in the place of Dr. Budd. Messrs. Dunmore, Clark, Wilcox, Gillo, Husbands, Hughes, and Seed were elected members of the committee; Mr. W. H. Warner was appointed treasurer *pro tem.*; and Mr. W. H. Barton, the honorary secretary, was re-elected.

A resolution was then passed that the officers now elected should hold office until the November meeting only, which was to become the annual meeting, and the secretary was instructed to make the necessary alteration in the rules.

The treasurer's cash account was then laid before the meeting, and the secretary was instructed to apply for all the subscriptions still in arrear.

A donation of two guineas was directed to be paid by the treasurer, with the thanks of the Society, to the Bristol Institution, and likewise a donation of one guinea to the keeper of the Institution.

The Secretary then read the annual report of the Committee, which was unanimously passed.

Annual Report of Committee.

About this time last year, a gentleman, now a member of our committee, was instrumental in inducing some of the Bristol photographers to meet at an hotel in this city, for the purpose of considering the question of prices; but, although several meetings were held, nothing definite was arrived at on the subject for which these meetings were especially convened. But it was proposed to establish in Bristol a photographic society, and the adoption of this suggestion has been attended with a success which the record of your year's labours will best show.

The April meeting was devoted to the election of officers, passing rules and regulations, &c. In May, Mr. Dunmore exhibited his fine collection of photographic dissolving views. In June Mr. Beattie read his paper on "Carbon Printing," which was illustrated with a fine collection of specimens; at the same meeting Mr. Gillo also exhibited some very beautiful collodion transfers and prints on Obernetter's paper. The summer months of July, August, and September, of which at least one should have been devoted to an out-door meeting, the Society was dormant. Probably the recent formation of the Society on the one hand, and a certain amount of neglect on the other, were the causes of the neglect of the agreeable reunions. But your committee hope to manage things better this year, and it is their intention to hold at least one out-door meeting, to which ladies will be especially invited, and the social element be well cared for. In November, Mr. Ennel read his paper on "Glass Houses and Lighting." In December, Mr. Gillo read a paper on "Lighting and Effects Producible in the Studio (Portraiture only)." Mr. Wilcox also brought forward specimens illustrating the same subject. In January, Mr. Barton exhibited and described his new Knapsack Tent. In February, the Secretary read Mr. W. H. Warner's paper on "The Difficulties Attendant on Photography in India Applied to England, and How to Overcome Them," which was illustrated by a series of fine cabinet photographs. The Secretary then laid before the Society a carbon print by Mr. Pouncy, forwarded by Mr. Warner for that purpose.

Having thus briefly reviewed the proceedings of the Society for the past and first year of its formation, your committee venture to hope that with increased exertions on the part of the present members, and the enlistment of many new members during the ensuing year, the Bristol Photographic Society will have a long and successful career, and be able to hold its own among the active photographic societies of this country.

A letter was produced from Mr. Beattie, stating his inability, through illness, to attend the meeting to read his promised paper.

Reference was made by Mr. Dunmore to sun-printed pictures, which always fade in some degree, and he was hopeful that the carbon process would soon be rendered sufficiently perfect to be adopted.

Mr. Barton called attention to the great hydraulic power required for producing the matrix in the Woodbury process, and said he had been reflecting whether it would not be possible to produce them with a powerful rolling machine.

Mr. Dunmore enquired how many impressions could be taken from a mould. In reply to which

Mr. Barton stated that thirty could be taken in an hour and he did not think that there was any wear on these.

Mr. Gillo also answered, that each relief would produce from six to eight lead types, and each type from 500 to 1,000 impressions.

Mr. Dunmore and Mr. Gillo referred to the better tone to be obtained on doubly albuminized paper, which, however, required a strong bath and long floating.

Mr. Gillo said he did not think that artificially drying in closets and before fires, &c., was good for papers; he always preferred floating it over night, and letting it dry naturally. In artificially dried papers the prints were cockled in large pictures; in naturally dried papers this never occurred, and he found the prints toned more easily. Mr. Gillo also referred to the evils of dried flannels in printing presses, which he thought clearly showed that there must be a certain amount of moisture in the paper to give a good result, in which remark Mr. Barton agreed. Mr. Gillo stated that he had often experienced an evil in printing large pictures with fine lines: these lines always got blurred in opening the press to see if the print were sufficiently exposed. He obviated this by having a test press close by, and when the picture in that was properly printed, he presumed the larger one was also, and took it up; he likewise related an experience in taking a church view (interior) with a front window: to prevent the halation thus occasioned, he put several coats of collodion on the plate, and found this obviate it.

The Secretary then announced that Mr. W. H. Warner had promised to read a paper on "Light and its Origin," and that Mr. Solomon, of Red Lion Square, London, would exhibit his magnesium enlarging apparatus at the next meeting, and produce pictures both on salted paper and collodion before the Society.

This terminated the proceedings.

Liverpool Amateur Photographic Association.

The third monthly meeting of this Society for the present year was held on Tuesday evening, the 29th ult., at the Free Public Library and Museum, William Brown Street, the President, Mr. John Henderson, in the chair.

After a special meeting to amend one of the rules had been held, the minutes of the last meeting were read and confirmed.

Mr. Peter Pearson and Mr. Helenus R. Robertson were elected members of the Association.

Some members who had visited the *soiree* of the Manchester Photographic Society gave a favourable report of the exhibition and of the courtesy with which they were received.

The Secretary was requested to write a letter of sympathy to Mr. C. Bell, who had been lately seized with serious illness.

A note from the Secretary of the Field Naturalists' Club was read, thanking the members who had sent specimens to their recent *soiree*.

The Secretary brought before the meeting a request from the Library and Museum Committee of the Corporation that the Association should recommend the best method of producing a number of photographs of the works of art in the museum, which was discussed at length. It was decided to refer the subject to the Council to take the necessary steps.

Mr. R. C. Johnson, in reference to Mr. Lewis Hughes's arrangement for a solar camera, explained the reasons why it could not be mathematically correct, except on two days in a year. Practically, however, Mr. Hughes had found his plan to answer.

There were exhibited a couple of photographs of the storm at Wick, on Monday, 7th February, taken by Mr. Johnston, and two transparencies of Carnarvon Castle.

The President remarked on the means recently proposed by Mr. Dawson for accelerating the action of collodio-bromide plates by the addition to the sensitive collodion of ammonia and tannin, and promised to experiment, if possible, and report on it at a future meeting.

Mr. Lewis Hughes showed a large number of lantern photographic transparencies by the aid of the oxyhydrogen light. The subjects were landscape, architecture, microscopic enlargements, the moon, and others.

A vote of thanks was unanimously passed to Mr. Hughes, after which the meeting separated.

Talk in the Studio.

The Photographic Society of London.—The next meeting of the London Photographic Society will be held at No. 9, Conduit Street, on Tuesday evening next, 12th instant, at eight o'clock, when Dr. Anthony will read a paper entitled "The Photographic Atelier in 1870." The meeting will afterwards be made special, to permit of the consideration of matters relating to the foreign issue of the Journal. Mr. Jabez Hughes's communication on Carbon Printing will be postponed until the May meeting.

Shakespeare Proverbs.—Mr. C. Warburton favours us with Nos. 1 and 2 of a series of twelve cards which are in course of issue under the title of the "Shakespeare Carte de Proverbe." Each card contains a miniature copy of the Chandos portrait of Shakespeare, and about fifty or sixty selected proverbs from his works, with due references. The characters are necessarily very small, but the definition and printing are so excellent that no difficulty is experienced in reading the whole.

Photographic Enamels.—We learn from Mr. Henderson that Her Majesty has expressed her great satisfaction with the ceramic photographs he produced to her order. We would again point out to portraitists that a creditable and profitable branch of their art remains, as yet, a comparatively unworked mine, and that the royal patronage just bestowed upon this branch is likely to give an impulse to demand.

Eggs Used in Photography.—The annual consumption of eggs in photography is nearly a million in the United States alone, while the number used on this side the Atlantic is probably at least three or four times as great. Hence it may be estimated that not less than five millions of inchoate fowls are sacrificed every year in the production of photographic portraits!

Photographic Studies.—The *Daily Telegraph* says:—"There have been many ingenious combinations in the practice of photography, for the attainment of pictorial effects. The 'built up' scenes in which, by the painter's skill, groups of living figures are as well balanced as they could possibly be, are familiar to all persons who frequent the photographic exhibitions. So, too, are the skilfully posed and carefully costumed portraits—as, for example, the well-known series representing members and associates of the Royal Academy—which bear a marvellous resemblance to the works of old masters seen through a brown glass. Another phase of photographic ingenuity is found in the strangely deceptive semblance of moonlight given to scenes that are not only taken in broad day, but actually include, as an object, the sun itself. The amusing dispute between husband and wife in the 'Taming of the Shrew,' as to whether the sun or the moon is shining in the heavens, might be illustrated by one of these heliographs, but that appearances would be too positively on the side of the gentleman, albeit they would be, as he was, wrong. Colonel Stuart Wortley, an amateur in the practice of photography, and a thorough artist in his amateurship, has tried his hand at all the different forms of pictorial illusion, and his pseudo-moonlight scenes are magical in their effect of reality. Where the reflections are boldest, this illusory character is most complete; and therefore the ocean views are the best among Colonel Wortley's series. They are the best, not only as regards the sea itself, but, in a still more notable degree, with respect to the cloud scenery which forms part of their pictorial value. One or two, indeed, are almost wholly studies of light and shadow playing on masses of cloud; and a particular instance of this kind of work is the scene entitled 'A Sail by Moonlight.' Colonel Wortley is equally successful in his portraiture of human faces and figures; and the half-length study of a lady, imitated from the quaintly vivid school of Holbein, is a wonderfully well contrived piece of picturesque photography. Not less remarkable in its approximation to an individual style of painting is the portrait of a lady draped in black lace and holding a fan. This photograph might pass very well as a copy of one of Phillip's Spanish beauties; and so full of breadth and tone is the picture that it actually leaves upon the mind the impression of deep rich colouring."

Making Vignette Glasses.—A very easy way of making vignetting glasses photographically, and better, we think, than that suggested by Mr. Henderson at the South London Society, is to place at a window a piece of dark paper of any suitable size, with an oval, pear-shaped, or other outlined hole in it. In front of that, and at a distance, to give a proper shading of light, hang or secure in any convenient way a piece of white tissue-paper. Now set up your camera, and take a picture of this shaded-light spot. To secure very great softness of shading, the tissue-paper may be moved backward and forward between the lens and the hole in the paper. You will thus obtain a negative from which you can make any number of vignetting glasses. These could probably be printed so as to be most efficient on dry plates.—*Anthony's Photographic Bulletin*.

Perils of a Photographic Editor.—Mr. E. L. Wilson, Editor of the *Philadelphia Photographer*, having, in recent numbers of his journal, expressed an opinion that a patent was mooted which claimed the monopoly of all methods of utilizing waste by recovering silver and gold from solutions by precipitation, has recently been arrested for libel. Mr. Wilson describes his arrest thus:—"On Friday morning, March 11th, 1870, while walking with my wife to the Courtland Street Ferry, New York, on our way home, after nearly two week's absence, I was met by Johleyman Shaw, 'President' of the 'Shaw and Wilcox Co.,' so-called, pointed out by him to a deputy-sheriff of New York, and by the latter arrested, taken to the sheriff's office, and there detained until I could procure $2,000 bail for my appearance at court when directed, to answer a charge of the said Shaw, for 'malicious libel'—said 'libel' being the publication in my journal, February 1869, of an article by Mr. V. G. Bloede on the Shaw and Wilcox silver saving apparatus, and my remarks thereon, together with my remarks on the same subject, as Editor of this Journal, in the last issue; damages claimed by said Shaw being $30,000."

Difficulties of Genre Photography.—Dr. Vogel, speaking of the attempts of some of the Berlin artists to produce genre pictures, says:—"The thing is not so easy as it appears. An original case came recently under my own notice. Perhaps you know the pretty pictures called 'Motherlove.' A young mother in modern costume sits reading in a fauteuil; her little son approaches from behind, and, standing on a chair, embraces her. Surprised and delighted, the mother drops her book and kisses the child. A photographer tried to imitate this picture from life. A young lady for the character of the mother was easily found; she took her position very gracefully, and made a very affectionate face, but the boy who should represent the son was not so easily managed; he seemed to have no inclination to embrace this pseudo-mother; he made a strong opposition, and only a sound thrashing brought him finally to terms. This, of course, had fatigued the lady; and, finally, the result was that the boy looked as if he would choke his mother, and the mother's face had the expression of a reproach for being interrupted in her reading. This is only one instance; but Loescher and Petsch and Milster can give hundreds of instances where a beautiful idea had to be abandoned on this account."

Solar Camera Patent.—A suit has been some time before the United States Courts, the object of which was to protect the right of Mr. Woodward, as inventor and patentee, to the exclusive manufacture of solar cameras. The judge, in giving his decision, said:—"The solar microscope and the photographic camera doubtless gave to the patentee the materials that he subsequently contrived and arranged in the solar camera. His merit consisted in being the first to combine the elements there taken from the two." The decision was in favour of Mr. Woodward, and a perpetual injunction against certain imitations was granted.

Gallic Acid in Collodion.—Mr. H. T. Anthony, referring to Mr. Bovey's recent proposal, says:—"This method of obtaining rapidity is not new, although it may not be generally known. A similar process was used a few years ago, we have been told, by Mr. Langenheim, of Philadelphia. We have used it ourselves, but found that, by the action of the gallic acid, the silver solution soon became very much affected and rendered unfit for use."

A Good Developer.—The following developer is said, in *Anthony's Bulletin*, to reduce the time of exposure at least one-third or more:—

Double sulphate of iron and ammonia	4 ounces
Water	64 ,,
Pure rock candy	½ ounce
Acetic acid	4 ounces
Alcohol (Atwood's)	½ ounce

Grind up the candy with the iron, and dissolve in a little warm water, and then add the remainder of water cold, the acid, and alcohol; shake up, and filter. Bath forty to forty-five grains strong, and slightly acid.

Dumas and Daguerre.—The following paragraph has been "going the round of the papers":—"In 1827, M. Dumas was lecturing in the Theatre of the Sorbonne, on chemistry. At the close of his lecture a lady came up to him and said, 'Monsieur Dumas, as a man of science, I have a question of no small moment to me to ask you. I am the wife of Daguerre, the painter. For some time he has let the idea seize upon him that he can fix the images of the camera. Do you think it possible? He is always at the thought: he can't sleep at night for it. I am afraid he is out of his mind. Do you, as a man of science, think it can ever be done, or is he mad?' 'In the present state of knowledge,' said Dumas, 'it cannot be done; but I cannot say it will always remain impossible, nor set the man down as mad who seeks to do it.' This was twelve years before Daguerre worked his idea out, and fixed the images; but many a man so haunted by a possibility has been tormented in a madhouse. This has been related within the last few days by Dumas."

Lafon de Camarsac's Enamels.—At a recent meeting of the Philadelphia Photographic Society Mr. John Moran made some remarks as the result of an examination of the photo-enamels and the process of M. Lafon de Camarsac. While admitting M. de Camarsac's claim to excellence in general effects, sweetness of colour, and preservation of the half-tones of his pictures, Mr. Moran urged the point that these desirable qualities were due quite as much to M. de Camarsac's skill in retouching as to the chemical means employed in producing them. Upon close examination Mr. Moran found, in a majority of cases, the deepest shadows on the drapery, hair, velvet, &c., and high lights generally, had all been put on by the brush. As the result of a chemical process, he thought they were not equal to their reputation, although, as pictures, their merits are undeniable.

Hint for a Medal.—At a meeting of the Ferrotypers' Association of Philadelphia it was resolved that the Society purchase a gold medal, have it properly engraved, and of a suitable size to wear on a watch-chain as a charm; to be given, at the expiration of the year, to the member who shall in the meantime produce and bring into the meetings the best ferrotypes the greatest number of times. Such a medal would have the advantage of cheapness as well as neatness.

To Correspondents.

To Agents and Advertisers.—Next Friday being Good Friday, the Photographic News will be published on Thursday, April 14th. Advertisers should therefore send in their Announcements not later than Wendnesday, the 13th.

Fair Play.—In order to secure the copyright in a photograph it is necessary to register it duly at Stationer's Hall before any copies are sold. Having failed to take the proper steps, you cannot now secure the copyright, nor prevent anyone from copying your work. Such copying is not honourable, but, under the circumstances, not illegal. The fee for registration at Stationer's Hall is one shilling, and the cost of a form one penny. Personal attendance is necessary, as instructions by letter are not received by the registrar. If you send a print with full instruction to our publisher, and fifteen penny stamps, he will send to the office and get the registration effected for you.

Amateur Photo.—There is no such work as you desire in existence, so far as we know. A popular explanation of the meaning of such chemical and photographic terms might be useful to some, but, as a rule, a knowledge of them is easily acquired in the course of study of the art in journals and manuals. There is a Dictionary of Photography in existence, but it does not generally enter into such minutiæ as you mention. It is a useful work in some respects, but not trustworthy in all. The white salt, in parcel marked No. 1, is apparently nitrate of potash; the substance in parcel marked No. 2 is iodine.

R. Mayer (Belfast) sends us some excellent examples of card portraiture, printed on Obernetter's collodio-chloride paper, and toned in the sulphocyanide of gold bath. The tones are good and various, varying from warm purple brown to black. Some of the portraits of children are very pleasing.

J. L.—We hope to receive the comunication shortly, and it will appear as soon as we receive it. 2. Obernetter paper can be obtained, we believe, of Mr. Solomon, and of Mr. Bruce, Photographer, Dunse, N. B. 3. The original painting of the "Last Supper," by Leonardo Da Vinci, had almost perished before the completion of the sixteenth century, and it is now in Milan in a very dilapidated condition. The picture is known chiefly by copies, the best of which, by Marco d'Oggione, a pupil of Da Vinci's, is now in the possession of the Royal Academy. Da Vinci is said himself to have painted the head of Christ in this copy for his pupil. The picture was exhibited in the Royal Academy recently, in the collection of works of Old Masters. It would be difficult to name absolutely the three finest paintings in the world; but the following three have that reputation: Raphael's "Transfiguration," Domenchino's "St. Jerome," and Titian's "Peter the Martyr." But it is needless to say that such a classification is somewhat arbitrary.

W. B.—As both the collodions you name are manufactured according to unpublished and secret formulæ, it is quite impossible to state anything with absolute certainty as to the changes they undergo. It is probable that the addition of a bromide may improve the insensitive sample. 2. It is wise to keep a negative bath in the light when not in use. A piece of pure india-rubber tube may be used in inserting the taps, but not cork or vulcanized india-rubber.

Oxoniensis.—The negative from which your print was produced appears to be a pretty good one. 2. It is quite safe to develop by candle-light, if the flame be kept at a moderate distance from the sensitive film. 3. You will find a communication in the News a few weeks back, on reducing intensity. We have seen many of Mr. Stillman's prints, which fully bear out his report.

Capt. Turton.—Thanks. You will do wisely to see the manipulations in the carbon process, and form your own opinion.

Pyro.—If a rolling press be kept in use, and kept dry and clean by dusting or rubbing with a soft cloth, it will not need any special cleaning. If it require cleaning, a little fine rotten stone and oil will be useful, but very thorough rubbing with clean cloths must be used to remove all grease. 2. You can purchase felt carpet at any carpet warehouse, or in the country generally of a draper. It is not a durable article, and hence not economical. For cheapness, Kidderminster carpet will answer your purpose better. 3. It is possible to stretch a background on a frame after it is painted, but a little care is required to prevent cracking. 4. A woollen cloth background answers, if care be taken not to wet or soil it.

In Trouble.—You may either neutralize and sun your bath, or boil it, by which operations the trace of iron and a little silver will be thrown down, and may be filtered out. 2. The milkiness in the gold toning bath is caused by the formation of chloride of silver, and also carbonate or acetate, the presence of which is not injurious. You cannot entirely prevent it, but it will be reduced to a minimum by thorough washing of the prints before toning, which will make the toning operation slower. 3. Neutrality is desirable, but it is not imperative. If the toning bath be not neutral, take care to wash the prints well before immersing them in the fixing bath.

A Subscriber.—Mr. Fry, whose advertisement you will find on another page, will probably undertake the work.

J. H.—It is impossible to describe in detail the operation of enamelling with gelatine and collodion in this column. You will find several articles on the subject in our Eighth Volume, and page 82 of our Year-Book for 1865. The process in brief is this:—A perfectly clean piece of plate glass is covered with tough plain collodion, and suffered to dry. It is then coated with a solution of gelatine, which is also suffered to dry. When required for use, the gelatine surface is moistened with cold water, and a print, also wet, laid face down upon it, and pressed in contact, so as to force out air-bubbles. It is then left to dry, when it is lifted from the glass, bringing with it the gelatine and collodion on its surface, which is as fine and polished as the glass with which it has been in contact.

D. W.—Papers sent. Thanks. We are glad that a satisfactory result has followed.

Williams.—The stains to which you refer as arising from intensification with permanganate may be due to one of two causes: either the use of too strong a solution, or imperfect washing away of the fixing solution before applying the permanganate. 2. Dippers with ends of glass bent up at the end to form the rest sometimes cause streaks. We generally use a dipper formed of a piece of plate glass with a narrow strip cemented on with marine glue. Such dippers answer well, are easily made, and do not produce streaks. 3. It is a common circumstance for negatives to be somewhat reduced by varnishing. The best plan is to intensify just sufficiently to bear this reduction. 4. The manufacturer of your lens has ceased his connection with photography. You cannot do better than carry out your resolve to be content with nothing but the greatest excellence you can possibly attain. We shall have pleasure at all times in aiding you.

B. L. S.—We have not heard of any one commencing the system of letting out apparatus for hire yet, and cannot but fear that the idea has not met with favour. The exchange idea shall have our best consideration.

A. Johnston.—The omission was an accident; the matter shall receive due attention. The order was duly received. We are glad to hear of the success.

Dexter.—The Photographic News is always published on Friday morning. Any delay in your receipt of it must be due to your agent, or his London agent. Enquire of your agent, and assure him that it is ready on Friday morning.

Photo.—Thanks for the curiosity. We shall probably notice it shortly.

Bristoliensis.—Our own mode of replenishing a bath is first to add to the old bath as much water as may be necessary to make up the quantity, and then filter this, getting rid of some excess of iodide of silver, and then add sufficient nitrate of silver in crystals to make the whole of the proper strength. If you do not wish to increase the quantity, crystals may be added to the impoverished bath. This and some following answers were accidentally omitted last week.

An Amateur.—Mr. England has recently been working the gum-gallic dry process. His modification of the collodio-albumen process you will find in our Year-Book for 1868, and in the Photographic News, Vol. XI.

J. F. Scott.—Our experience with various lamps is not sufficiently extensive to enable us to give decided advice, as we ourselves usually employ gas, and occasionally a reading lamp with colza oil. Parraffine lamps give, we believe, the most brilliant light, but we have no practical experience of their advantages and disadvantages.

R. D.—The only remedy we know for cracking of the film of albuminized paper is to avoid permitting very complete desiccation, either before sensitizing or during the manipulations. Especially take care to mount the prints before they are bone dry. When nearly dry, place them flat under a weight, and prevent them curling.

R. P. (Ballancollig).—The lenses you name are manufactured with sufficient uniformity of excellence to make the purchase of one from a second-hand catalogue tolerably safe. We have not tried one with central lens removed for card portraiture, and cannot with certainty speak. The manufacturer would probably inform you.

Crayon.—We believe that there is opening for artists well skilled in retouching negatives, and it is not improbable that if perfect confidence is established in the skill, care, and trustworthiness of the artist, photographers might be willing to entrust their negatives to him to retouch at home, as many may require such service who have not sufficient work to engage an artist. In some cases we know artists working at this branch divide their time between two or three establishments. We could better have judged of your prospects if we had seen some of your work.

M. T.—The next international exhibition will be in 1871; it will be on a different principle to those hitherto held. An article on the subject is compelled to stand over for lack of space.

Some Reviews are again compelled to stand over until our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 606.—*April* 14, 1870.

CONTENTS.

PAGE
Photographic Contributions to Vice 169
The Position of the Carbon Process 170
Foreign Miscellanea 171
Practical Hints on Mounting, Cements, &c. By B. L. S. 173
Photography in Measuring Microscopic Objects 173
Negative Retouching. By W. J. Baker 174
Advantage of Silvered and Washed Paper over Paper which is Silvered only 175

PAGE
Cracks and Flaws in Albuminized Prints. By Oskar Pfeiffer ... 175
Prints and their Production. By S. T. Davenport 176
Vice and Photography 177
Correspondence.—The Sun's Heat—Status of Photography 178
Proceedings of Societies.—Photographic Society of London—Photographic Society of Marseilles 179
Talk in the Studio 179
To Correspondents........ 180

PHOTOGRAPHIC CONTRIBUTIONS TO VICE.

o remark that there is no agency so perfect that it cannot e made to contribute to vile ends is simply to utter the ritest of platitudes; we need feel no especial concern, herefore, when charges are brought against photography f aiding a trade in indecency, even when the charges are nade in somewhat extravagant terms. Literature, art, cience—even religion itself—each has been made to pander o vice. Photography, as we have often regretted, by the atal facility of its application, becomes a ready agent in roducing pictorial stimuli for prurient minds. That gross ndecencies have, by the aid of the camera, been produced holesale and spread broad-cast there can be little doubt. ortunately for the interests of society, the panders of his foul trade perpetually come under the active attention f the Society for the Suppression of Vice, and we are lad to see that, as a result, the pains and penalties inurred in such traffic are greater than the profit.

Thus much affirmed, we feel bound to point out some xaggerations and inconsistencies in an article from a ontemporary, which we reproduce on another page. Vith the aim of the article we cordially sympathize; and f it really had offered "some practical suggestions owards arresting" the evil, as its opening sentences nnounced it would do, we should have been glad, if pportunity afforded, to have aided in the effort.

It appears to us to be a decided misconception or exageration to represent the obscenities perpetrated by photoraphy as more gross and more dangerous than those roduced for similar purposes by the pencil of the painter iven to salacious imaginings. The argument of the writer s, that the grossness of the painted obscenity was calcuated to revolt the senses rather than stimulate passion, hilst the realism of photography is calculated to appeal atally to the latent sensuality of human nature. Surely his is reversing the legitimate course of argument on such subject! The actualities of sensualism are, whatever orm they take, usually revolting to the on-looker; and hotography cannot idealize the actual coarseness of nature. peaking of the painted indecencies, the article in question emarks, "innocence, or even tainted refinement, was more ikely to be disgusted than attracted by the harsh idealiation of the coarse fancies of a brutalized nature." But f idealization, artfully intended to stimulate the prurient, ven although crudely done, was likely to disgust, surely he undisguised, unidealized rendering of "brutalized ature" by "brutalized nature" must *a fortiori* revolt and isgust still more. The worst presentments of vice may e made alluring "if imagination amend them;" but hotography has no imagination: that which is gross it vill represent as gross; that which is coarse, foul, or egraded will not become refined or attractive under its treatment. Its literal, detailed rendering of nudity and various forms of indecency, and the consciousness of its reality, may afford a foul delight to the depraved palate already jaded by familiarity with what may be termed the "made-dishes" of the skilled artist in pandering to sensualism; but this literal grossness is surely less likely to be harmful to "innocence, or even tainted refinement," than the subtleties of the experienced pictorial pander. The subject is an unpleasant one to discuss; but as photography is perpetually denied any art power, its literal and realistic renderings being urged as a drawback in an art sense, we feel bound to point out that deplorable as is its application to purposes of immorality, its results can rarely be so injurious as the diabolical conceptions of a polluted imagination depicted by the pencil of the artist.

There seems to be a singular inconsistency in the article in question in insisting on the enormous profit obtained in this infamous traffic, and on the difficulty of tracing it so as to secure convictions, whilst in another paragraph advertisements are quoted, in which the supposed offensive prints are openly announced at very low prices. From *Bell's Life* the following advertisement is quoted:—"A thing of beauty is a joy for ever. Cartes-de-visite of beautiful women, 6s. 6d. per dozen; ditto, exquisitely coloured, 12s. per dozen; ditto, from life, 12s., 18s., and 24s. per dozen; stereoscopic slides from nature, 3s. 6d. each." Surely no one supposes that in the card pictures at six shillings and sixpence per dozen anything but commonplace copies of engravings will be found, or that the stereoscoped slides from nature, at a higher price, thus openly advertised, will contain anything obnoxious to Lord Campbell's Act. Those who are induced by any prurient hope to send money for such pictures, will, we doubt not, be very wholesomely disappointed at the decorous dullness of the waste prints which are occasionally disposed of by means of "suggestive" advertisements.

There is, however, a mode in which photography is very openly made the pander to vice, in a degree which is, we fear, more dangerously effective than its delineations of revoltingly coarse nudities. The town teems at this moment with attractively modest or coquettish portraits of acknowledged ladies of blemished virtue. The highest the land knows of goodness and greatness jostle, in their photographic effigies, those whose sole passport to publicity is their prostituted beauty. Photography, as now practised for publication in some quarters, seems to know of no distinction between fame and infamy, celebrity and notoriety. That such portraits may, by their real beauty and by their apparent purity, have a dangerous influence on the young, innocent, and refined, may be readily believed, and their great publicity and constant proximity to the portraits of the purest and best is deeply to be deplored. Scarcely less lamentable is the frequency with which the portraits of actresses, in many cases pure and estimable as well as beautiful women, are displayed in various phases of semi-nudity, and in various positions certainly not chosen for their modesty. It often happens that the light costume which, in its position in a drama, amid the scenery, colour, and action of the piece, suggests nothing but its artistic fitness, when isolated from these and depicted by photography in a studio suggests simply the desire of the wearer for display under circumstances which shall render as apparent as possible the limbs and personal charms of the wearer. That there is need, in the interest of good taste, for a sweeping reform in this matter, we think, there can be no doubt. As for the production and wide-spread circulation of the portraits of soiled doves with attractive faces and arcadian names, which are now so popular, and occasionally found in respectable family albums, we apprehend that no excuse can be offered beyond that which may be urged by the commonest thief for his dishonesty, namely, that it pays. It does something more, however, and we may quote the words of a recent article in the *Gentleman's Magazine* to say what:—

"It familiarises all classes with the habits of the most abandoned, and so popular has it become that, when the subject herself appears in public, clad in the gaudy costume of her class, she is recognised and pointed out by those who should be ignorant of her existence. Could the photograph tell its story, it would then serve the useful purpose of a warning, for every career of immorality and defiance of social laws teaches an invaluable lesson. The victim of heartless seduction—a happy home forsaken—a short life of excitement, ending in the inevitable misery of poverty and disease—such, without any aid of prophetic inspiration, might be the story told of that pretty photograph which, in the absence of 'the other side of the picture,' has done more injury by its fictitious beauty than even the worst of our 'lady-authoresses'' novels have done; for the power of written words for good or evil can be ascertained by the moral they convey, while the influence of a disguised example can be never known."

THE POSITION OF THE CARBON PROCESS.

In an article in our last, Mr. Blair accredits us with the advocacy of the cause of the Autotype Company, and is good enough to describe the advocacy as skilful, and to recognize in it an advantage to the general public. Mr. Blair is so candid and fair a writer, and so free from the vice of some disputants, of attributing unworthy motives, that we should not readily, under any circumstances, object to any expression of his opinion, no matter how opposed to our own. In the present instance, in assigning us the position of advocate of a private interest, he couples it with no implication of blame, but rather accompanies it with compliment. Nevertheless, in the interest of truth, we must disclaim the position he has assigned us. We are the advocates of that which to us appears right; and if, in the matter in hand, the Autotype Company possess right, so much the better for them. In choosing our line of advocacy, we should always, as a matter of choice, be found on the side of the public; and in this instance we are happy to believe that the side of right, of the public, and of the Company in question, are coincident.

We need not reiterate our position at any length here, but may briefly restate the facts. Until the announcement of Mr. Swan in 1864, the production of perfect carbon prints on any practical or commercial scale was thought impossible. By the method Mr. Swan patented the production of such prints became a practical commercial fact, and by the subsequent improvements patented by Mr. Johnson the process became easy, and is rapidly becoming popular. Both Mr. Swan and Mr. Johnson and the *cessionaires* of their patents have spent much time and money on making their methods perfect, working through difficulties, and making the path of the general photographic public smooth in relation to carbon printing. On every principle of right it appears to us that they should receive fair remuneration for this; and after a tolerably close examination of their claims, assisted by personal conference with one of the ablest patent lawyers, we are satisfied that those claims have the sanction of law as well as justice. And as, in the exercise of their legitimate claim to a profit on the processes they have worked out, we find that no unfair restriction is placed on the public use of such processes; that the necessary materials are supplied, with all the advantages of experience in their manufacture, at fair market rates; and that neither royalties nor licence fees are imposed, except where especial privileges are required, we feel satisfied that the interests of the public, of the patentees, and of justice, are served by a clear statement of the facts of the case, without advocacy on the one side or the other.

So much for our view of the commercial interests at stake. But Mr. Blair mentions some other matters of very considerable interest, which demand a word. The public well knows that Mr. Blair was one of the earliest and most ingenious workers in this important branch of photography, having been one of the first to perceive the true principles upon which half-tone in carbon could be secured, and, we believe, the first to put the idea into practice. In his last communication he points out that the idea of a transfer process had actually occurred to him, and was abandoned for lack of mechanical appliances. His publication of this fact as early as 1861 unquestionably establishes his claim to priority in the idea.

Having called attention to this fact, Mr. Blair states that sufficient was published to show the practicability of a transfer process with the tissue then in use, and asks us wherein the tissue of Fargier and Poitevin, for purposes of transfer, differs from that of Swan. As we have said, we are in no way concerned to maintain the validity of Swan's or any other patent, but as this is really a very important question, but nevertheless one to which the answer is, we think, very clear and simple, we will briefly point out where the essential difference exists. First, it is necessary to remember that Poitevin's tissue, as described in his specification, and Fargier's, as described in his specification, are by no means necessarily identical; and next, that either of them would, except by accident, be unsuitable for transfer. Poitevin exposed in contact with the pigmented gelatine, and developed by washing away at the same side. In adopting this plan, in order to get even an approximation to gradation, or even a picture at all, it is imperative that a very thin coating of the pigmented gelatine be applied to the paper, so that it should, as Mr. Blair has himself well pointed out in relation to Pouncy's first process, be well incorporated with the surface of the paper. A tissue so prepared, it is clear to all who have experimented in carbon printing, would be useless for transfer purposes. In its degree the same remark is true of the paper tissue mentioned by Fargier in his specification. His idea in preparing a paper tissue was clearly *not* to render it suitable for transfer. He indicates the use of the "thinnest possible" paper, which is to be printed *through*. To secure this end most perfectly, the thinnest available coating of pigmented gelatine would be necessary, and the tissue so prepared would not be suitable for a transfer process, which requires a certain thickness of gelatine over and above that necessary to form the deepest blacks in the picture, in order that transfer may be possible. Now in Swan's process we have, for the first time, the conditions of a transfer process clearly apprehended and set down, with an approximate statement of the proportions and quantity of material necessary to each square foot of tissue. Mr. Blair, however, did make some transfer experiments with the tissue he had at that time in use. In answer to this, two or three considerations occur: First, the tissue employed does not appear to have been suitable, as he states the pictures were partially destroyed in the process of transfer; second, he did not work out the method to a success; third, if he had done so to his own satisfaction, and had not brought the method into use, it would not have been a bar to a separate discoverer patenting a similar method. Mr. Justice Parke says "there is no case in which a patentee has been deprived of the benefit of his invention because another had also invented it, unless he had also brought it into use." Still less would the merely experimental prior discovery and publication of any novelty debar a subsequent worker from patenting a practically worked out process. Chief Justice Tindal has distinctly stated that "a mere experiment, or a mere course of experiments, for the purpose of producing a result which is not brought to its completion, but begins and ends in uncertain experiments, that is not such an invention as should prevent another person who is more successful, or pursues with greater industry, the chain in the line that has been laid out for him by the preceding inventor, from availing himself of it, and having the benefit of it." Even the statement of a process in a prior specification, if it has not been carried out, is insufficient to bar another patent; so that had the vague allusion in Fargier's specification been much more to the point, as it had not been applied to the purpose in question, would not have been of any weight. The decision in the case of Bett's capsules is much to the purpose here, and we append a report of the case:—

> In the case of Betts *v.* Menzies (10 H.L.C. 117, S.C. 9, Jur. N.S. 29), it was held that a general description in a prior specification or in a published book, even if suggesting information or involving some speculative theory pertinent to the invention in question, is not to be considered as anticipating, and therefore avoiding for want of novelty, a subsequent patent involving a practical invention productive of beneficial results, unless it is ascertained that the antecedent publication involves the same amount of practical and useful information Bett's patent was for the production of a material capable of application to many useful purposes by combining plates of lead and tin by means of pressure. It appeared that as far back as 1804 one Dobbs had patented a process for making a new material by combining lead and tin by pressure, but he did not, with any precision, define the relative thicknesses of the plates of metal, nor the degree of pressure to be applied, whereas Mr. Betts entered minutely into those points. Moreover, it was not shown that the earlier process had ever been carried into practice. Under these circumstances the House of Lords held that Bett's invention had not been anticipated.

We do not enter into any detailed argument on the subject ourselves, for we are not, as we have already said, in any way concerned to assume the position of advocate; we rather state some of the facts upon which our opinion is based, and leave others to form their own conclusions. In relation to another tissue, of which Mr. Blair has made mention—that of Mr. Spencer—we can offer no opinion, as it has not come under our attention; and whether its manufacture is an infringement of the patented method, or whether it is so regarded by the Autotype Company, we have no knowledge.

In regard to the early labours of Mr. Blair, another interesting fact demands our recognition. We have hitherto accorded the priority of the idea of printing from the back of a tissue, the paper basis of which was made temporarily transparent, to Mr. Swan, his suggestions having been published in our pages in 1867. The paper describing the method, we may state, had been in our possession twelve months or more before its publication; but Mr. Blair points out that the idea was published by him as early as 1859. The initial idea of this method is, then, clearly due to Mr. Blair, and Mr. Swan can simply claim the first publication of a practically successful method of carrying out the idea.

We had intended to enter into some other points of interest in relation to carbon printing, but must forbear at present for lack of space. We will, however, briefly refer to three or four points in connection with the subject, to which our attention has recently been definitely called.

1. It has been urged that it is unwise in the guiders of opinion to under-rate the permanency of silver prints until carbon printing is sufficiently tested, and available to take its place. Our answer is, that before the possibility of carbon printing was conceived, the instability of silver printing was a common theme with photographers and the public. *We* have always maintained that a carefully produced and carefully preserved silver print has a tenure of permanency, the end of which cannot be predicated. It is the uncertainty of this permanency in silver, and the public experience of the frequent instability of silver printing, which has destroyed its credit, and not the published opinions of any authority.

2. It has repeatedly been remarked to us of late that carbon printing seemed to be well suited for the reproduction of works of art, but not equally well fitted for doing justice to portraiture or landscape photography, and that, therefore, it is unwise to advocate its use for these purposes. In reply, we point to the fact in every photographer's experience that the results obtained on albuminized paper from good negatives are relatively the same, no matter what the subject. The paper which will yield a good print from a reproductive negative, will also yield a good print from an equally good negative of portrait or landscape, and there cannot be any reason why the same should not be true of carbon. The truth is, that hitherto a much larger experience has been gained in printing reproductions in carbon than in printing either portraits or landscapes, and in the selection of tissue of suitable colour and quality for the work. When equal attention has been devoted to the application of carbon printing to portraiture and landscape, the success will doubtless equal that attained in reproduction.

3. We have recently had a variety of minor objections to carbon brought before us, to the effect that the manipulations are difficult, the cost greater than silver, the permanency not greater than silver, that permanency is unnecessary, &c. Such objections as the last two quoted we do not suppose to be made in good faith, and it is not worth while to discuss them. The question of cost can only be satisfactorily determined after much more general experience than has yet been attained. The only careful estimates—those of M. Braun and Mr. Swan—show the cost to be less than silver. The question of ease in manipulation must also be determined by general experience. Mr. Baden Pritchard, of the Royal Arsenal, a comparatively recent carbon worker, informs us that he has already produced and sent out upwards of three thousand prints of military subjects in carbon, and that he finds no difficulty in this practical application of the process.

We are satisfied that one of the most important steps in elevating photography and securing the prosperity of photographers will consist in securing public confidence in its permanency; and we have faith in carbon printing as a means to that end. Hence it is that we feel concerned to keep the subject before our readers with an iterated persistency which may appear unnecessary to those who feel less interest in the reputation and prosperity of the art.

Foreign Miscellanea.

M. Ducos du Hauron announces that he is still making progress in his method of heliochromy, the details of which were made known in this journal some months back. He has rendered the process so far practical as to be able to publish a manual of directions for the production of coloured photographs, either opaque or transparent. The weak point of the process lies in the fact that the colours employed in the preparation of the chromo-photographs are not obtained by natural, but by artificial, means.

M. Balard, the discoverer of bromine, has been re-elected president of the French Photographic Society.

The *Moniteur de la Photographie* proposes to establish a "Bulletin Scientifique" in its columns, giving a digest of recent scientific papers of interest to photographers. Dr. Phipson, the able London correspondent of the *Moniteur*, has undertaken the task of preparing the *resumé* in question.

A Dutch chemist, M. Adrian, has been analyzing various samples of bromide of potassium met with in commerce. In ten specimens examined, the amount of pure bromide amounted to 62·8 to 91·6 per cent., the impurities consisting, for the most part, of sulphate of potash and chloride of potassium. The bromide of potassium obtained in London for photographic purposes is remarkable for its purity.

The oft-reiterated statement that the eye of a dead animal has impressed upon it an image of the last object seen in life has been the subject of serious investigation in Germany. Americans have gone so far as to state that the eye of a murdered man had been found in which a portrait of the murderer was distinctly traceable. In the investigation in question the eyes of thirty different animals, all of which had been killed with a view to subsequent examination, were carefully inspected, but in no case was there any evidence discovered to warrant the statement referred to.

A new toning salt of a constant character has been prepared by M. Maeder, of Erfurt.

Professor Hornig, of Vienna, who has devoted considerable study to the examination of photographic chemicals and requisites, with a view to the employment of the most suitable materials, has recently lectured before the Vienna Society on the subject of glues and gelatines, pointing out the important functions which these substances fulfil in various manipulations connected with the process.

M. Obernetter has a new mechanical printing process, of which he recently exhibited productions to the members of the Vienna Society. The invention has received the name of *Zink-druck*.

Dr. Van Monckhoven again complains that there is an impostor travelling about representing himself to be a brother of the worthy Doctor's. The perambulating swindler disposes of so-called secret processes to any photographer he may succeed in taking in. Dr. Van Monckhoven has advertised in France, Germany, Spain, and Russia, and requests photographers on whom the much sought after gentleman may call, to prevail upon him to have his portrait taken, and then to remit a copy of it to M. Van Monckhoven.

Yet another German journal has been started: the *Photographische Zeitung*. The *Moniteur de la Photographie* announces that it has now commenced its tenth year of existence.

Licht states that 500 cwt. of silver is used in one year for photographic purposes.

The "Berlin process"—by which is meant the taking of a negative upon ground glass, in order to impart to it a soft crayon-like appearance—appears to be almost unknown in Berlin itself; at least, so it would seem from the contents of the leading Berlin journals. The American and English photographic periodicals appear to have discovered the process by themselves.

MM. Goupil and Co., the proprietors of the Woodbury patent in France, have decided to grant licences, to the number of one hundred, to photographers in that country to practise the process. It will be henceforth known as the "Procédé Photoglyptique."

The Dresden Society is rapidly gaining recruits, and its organ, *Helios*, still continues to be edited with spirit by M. Krone. An article by that gentleman on the action of light upon sensitive films, and another upon the fuming of collodio-chloride paper by M. Fritz Haugk, appear in the last number.

According to Krone, collodio-albumen dry plates are endowed with more sensitiveness if, after sensitizing and washing, they are several times treated with a pyrogallic acid solution containing acetic acid.

The question of a copyright for photographic productions in Germany is again under discussion, and bids fair to be brought to a successful issue.

Cosmos states that M. Neyt, the well-known *savant* of Ghent, whose micro-photographs at the Paris exhibition were objects of so much admiration, is at present engaged in preparing photographs of the moon; and has already submitted some very promising results of his work to the Belgium Academy. M. Neyt operates with a mirror telescope possessing a focal length of five feet nine inches; the image is reflected laterally by means of a small prism, in the same way as in the Newton telescope, and enlarged by means of an eye-piece, and thus secured. The original negative is twenty-five millimetres in diameter, and is afterwards enlarged in the ordinary manner.

In hot weather the use of citric acid, in lieu of acetic acid, in the iron developer, is recommended by *Helios*. To keep the plate moist, it is advisable to dip the same into a second bath of two to four per cent. strength, and to place on the reverse side (when in the dark slide) a few sheets of bibulous paper impregnated with a mixture of water and ether in the proportion of three or four parts of the former to one of the latter.

M. Schucht recommends the coating of varnished negatives with linseed oil varnish, for the purpose of rendering the surface suitable for retouching. The plate must be well dried after the application, several days being necessary for the purpose; and the desiccated film of varnish should then appear so light as to seem like a breath upon the glass. Pencil and other retouching is easily applied.

Enlargements upon collodion, produced in the ordinary camera, is the subject of an article in *Licht* by M. Kleffel.

Some time since the German societies established the use of "Question Boxes," into which photographers slipped knotty problems, to be afterwards solved by discussion of the members. The plan is certainly a good one for the purpose of starting discussions; but, judging from the recent proceedings of some of the societies, the matters argued seem gradually to be dwindling down to points of the most trivial and unimportant character.

Professor Krippendorf, of Aarau, publishes in the *Archiv* an exhaustive communication upon transfer paper for collodion and other films.

The use of permanganate of potash is of considerable value to photographers working with resin collodions. A little permanganate solution dropped into the sensitizing bath from time to time purges the same from any organic matter which may have been absorbed from the collodion.

M. Adden publishes in the *Archiv* a recipe for a polishing mixture for paper prints, which he recommends as being a most efficient and serviceable material. The ingredients used are as under:—

Normal collodion	40 grammes
Thin turpentine	10 "
White wax	10 "
Bleached shellac...	3 "

Shaken now and then until completely dissolved. The polishing is effected by means of a pad of clean rag, a very little of the mixture being used for the purpose.

An exhibition of fine arts is arranged to take place at Vichy, in Mid-France, well-known as one of the favourite watering places of the Emperor. Photographs of an artistic or architectural nature will be admitted, and application for their admission must be made to the secretary of the committee, M. Girard. No charge will be made for space, but objects for exhibition must be forwarded to M. Carpentier-Deforge, 62, Rue Legendre, Paris, for inspection prior to their being sent to Vichy. The exhibition will remain open from 15th May to 1st Septemper, but all pictures must be forwarded to Paris prior to the 1st May.

MM. Leon and Levy have issued their series of views illustrating the inauguration of the Suez Canal. Most of the pictures have been taken instantaneously, and afford, therefore, good representations of some of the festival gatherings.

The second exhibition of the National Photographic

Society of the United States will he opened on the 7th Junc at Cleveland, Ohio. All pictures must be sent in on the 20th April, addressed to Mr. Wilson, secretary of the exhibition, Philadelphia.

M. Meydenbauer has submitted to the Vienna Socicty some photographic plans taken by means of his nearly constructed photo-plane table.

PRACTICAL HINTS ON MOUNTING, CEMENTS, ETC.

BY B. L. S.

Mounting without Cockling.—In a recent number you have given a most efficient stock solution for mounting proofs without cockling, always ready by simply immersing the bottle containing it in a vessel of warm water; but when it is required to mount long numbeis for binding, I think the following simple method, which I briefly describe, will be found cleanly, rapid, and efficient.

Stroke the proofs by drawing them face down on a sheet of glass, and under a piece of stout cardboard, held vertically (the proof being drawn upwards). Coat the backs with starch of good domestic make, laid on with a sponge; its consistency should be such as to leave a gloss when dry. Now trim the proofs, and on a smooth-faced lithographic stone lay a mount of the required size, mark with space lead the furthest left angle and side thus ⌐ ‾, theu centre the proof and mark its register, and adjust the press to a good firm pressure. Now lay down the dry proof to aforesaid mark, then, with a well-wrung sponge, pass quickly over the mount in a longitudinal and lateral direction, and placc it on the photograph. Pull once through the press, and the operation is complete. In this way I have mounted some thousands of proofs with great precision. By substituting a stone for the steel plate bed an ordinary rolling press may be used, but a lithographic press is much superior, and the danger of buckling is avoided. A German friend, in expatiating on the superiority of the scraper ovcr rollers for litho work, concisely explained, "It ish de nip."

Your preparation of gelatine will be most valuable for mounting in books already bound, and for album scrapbooks, &c.

Photo-litho Transfers.—It occurs to me that this alcoholic solution will be very uscful in the preparation of photo-lithographic transfers on albuminized paper, upon which surface I have made most successful transfers with a thin coating of hichromatized gelatine and a lengthened exposure in printing.

Cements.—In a book published hy Houlston and Wright, entitled "Enquire Within," will be found some useful receipts for adhesive material, and paragraph 2240 contains some simple, though much neglected, hints on their uses. In paragraph 2245 is a diamond cement; 2246, a rice flour cement, which can he used instead of starch in the above mentioned method; 2250 is a cement useful for stoppers and corks; and 2252 may be found useful in closing the joints of tent coverings and gas bags.

Artificial Cautchouc.—In No. 14 of the present volume you have mentioned an "artificial caoutchouc," which appears to be the very thing for coating canvas for the manufacture of gas bags. Pcrhaps some of your readers can say where it can be procurcd. Many will he glad to get a substance through which the gases will not percolate.

Artificial Light.—The pillars of carbonate of magnesia of Dr. Monckhoven are excellent for enlarging purposes. I wonder so few record their thanks (and experience) for useful communications in the News. For my part, I have compiled from its pages an enlarging process second to none for simple working and beauty of results.

Should not many of the new (?) processes be called News processes?

PHOTOGRAPHY IN MEASURING MICROSCOPIC OBJECTS.

In a paper by Count A. F. Castracane d'Antelminelli, on different methods of measuring microscopic objects, recently read before the Quekett Club, after reviewing the various systems in use, he finds all except photo-micrography wanting in exactness. He says:—

"Having proposed to myself to edit a most complete photographic monograph of the whole order of the Diatomaceæ, in which I have, up to the present time, included nearly a thousand types, I adopted the magnifying power of five hundred and thirty-five diameters for the reproduction of these, so that I could keep an approximative account of the relation of size between one type and another. The images—which I obtain directly, and which are usually called by photographers negatives, from which I print off so many identical proofs—are obtained on plates of glass. These present, with the greatest fineness and fidelity, not only the form of the Diatomaceæ, but even the finest details, which can only be perceived with doubt and great trouble when observing them directly under the microscope. Would that we could obtain equally fine results in the positive which is printed on paper, and which, by the imperfection of the surface presenting small asperities of elevated and depressed points, does not perfectly and equally adhere to the glass of the negative, and is far from presenting the same degree of fineness. Having thus at my disposition the most faithful and authentic representation of the Diatomaceæ on a plate of glass, I direct my attention to this, and on it I follow the enumeration of the striæ. To facilitate the enumeration, I count the lines which correspond to a hundredth of a millimetre, multiplied five hundred and thirty-five times, and I see how many lines are included in a space of the negative equal to 5·35 mm. This measure, cut on a thin metallic plate and placed on the negative or matrix, gives the greatest facility for obtaining the number which, multiplied by a hundred, will give, as the final result, the precise number of striæ, or rows of dots, which cover the valves of the Diatomaceæ.

"Those, however, who are not able to have recourse to photo-micrography, which also offers the incalculable advantage of giving, as it were, an authentic reproduction of the objects under study, in order to be as near as possible to the truth, ought to have recourse to repeated measurements according to different methods, assuming, for the final result, the mean number obtained by the repeated operations."

CRACKS AND FLAWS IN ALBUMINIZED PRINTS.

BY OSKAR PFEIFFER.[*]

There may often be remarkcd upon albuminized prints, even on those prepared from the best material, certain cracks and flaws running in parallel lines along the surface. These imperfections are in the highest degree injurious, for not only do they render the picture itself unseemly at the outset, but they become by handling, or by deposit of dust, more apparent and marked by time. The mending or finishing off of such pictures, either by retouching or colouring, is almost a matter of impossibility, as the wet pigments are attracted and absorbed by the ragged edges as by blotting-paper. More particularly is the occurrence of this phenomenon to be deplored when an enlargement is afterwards to be prepared from the print, as in the copy the defects are always reproduced with greater distinctness and more pronounced than in the originals, endless time and trouble heing then requisite to cover up the imperfections. Washing the prints is of little avail, the lights often being rendered dirtier by the operation.

The cause of these defects lies in the excessive dryness of the albuminized paper during the various photographic operations. With the exercise of a little attention and practice it is possible to tell whether the unsensitized paper is inclined to crack. Extraordinary brilliancy is generally a sign of this weakness, although it must not by any means be inferred that all brilliant papers are open to this objection.

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[*] *Licht.*

The first condition is that the paper should not be preserved in too dry a state, nor allowed to roll up. Very dry paper, on being sensitized, possesses, besides, the disadvantage of repelling the silver solution, which hangs upon the surface of the paper in drops. After sensitizing, the paper must not be dried too rapidly nor too highly, and should be suspended from two corners to prevent its rolling up, a precaution also requiring strict attention when the pictures are taken from the water after washing. Finally, they should be mounted in a slightly moistened condition, as when kept in rolls in a dry state the defects above referred to are easily developed on rubbing the paper-folder over the albuminized surface.

NEGATIVE RETOUCHING.

BY W. J. BAKER.*

Now that the retouched negative is fairly before the photographers of this country, and seems acknowledged on all sides to be a good thing, it is of moment to consider how we shall wisely use this new power, which is capable, in so great a degree, of modifying, even altering, the character of our negatives.

Few who can obtain the facilities for this method will need urging to its use, as they will be driven thereto by ever increasing competition. The first to adopt this plan will naturally be the most ambitious, those who already are looked upon, both by the public and the fraternity, as leaders; and what they set forth is always likely to be admired by the one and followed by the other.

What not to do becomes, then, of importance, lest a meretricious style be foisted upon us, by a demand from the public that we do something mechanical and inartistic, because some one of metropolitan location and continental fame does the same.

That this is no imaginary bugaboo the experience of many of us will attest, who have been asked to imitate the worst points of objectionable productions, as far as we could see, simply because the back bore a celebrated address. But of this further on.

The first point to consider is, that the process, in one respect, is radically different from touching on the print. There every stroke reduces the lights, while on the negative every mark makes them more intense. The one lowers the lights, the other works up the shadows.

This indicates that special care should be taken to keep those negatives intended for retouching soft, and thus allow for the intensity added by the pencil. Most of the prints from retouched negatives done in this country exhibit this fault in a glaring degree. An originally opaque negative is worked till, instead of a picture, it gives only a map (note the difference) of the face, by all but total obliteration of the modelling.

Did I say this country? I will not so limit myself. In my collection of a few foreign photographs there is a vignette of a lady with not ungraceful features. She is dressed in immense style. The face of this picture is so white that it almost shames the unshaded paper margin. Among some of the best photographs from abroad, this at once rivets attention.

"Who is that lady? Is she not lovely?"

"I do not know madam; this is a Paris photograph."

"Oh! Paris! How elegant! how perfectly clear! Why is it that we cannot get such photographs in this country?" And then considerately, as if in deference to a wounded vanity: "I suppose they have such a clear air there." And because this photograph, not a solitary exception, has the prestige of a foreign name, and is poor enough to meet an ignorant taste, nothing will convince three out of five but that their photographs are inferior in those very points in which their excellence consists.

Let us, then, guard against too much of this kind of clearness, lest we revert to the evil days when we ignorantly thought a negative must be as opaque as a brick, to print at all on albumen.

A lesser degree of this same fault is almost universal on retouched work, by which parts of the negative being rendered too intense, what artists call the "keeping" is destroyed. This is a defect but little obvious to the uncultivated eye, and would, among artists, be much more readily detected by a sculptor or painter than by a photographer. Being a matter that must be perceived to be understood, it is somewhat difficult to explain verbally. In a photograph the fault might exist thus: The line of the cheekbone, being prominent, would, at a certain angle, catch too much light, become too white and glistening, and thus have an undue projection in the proof, seeming to start out beyond the rest of the picture. In a profile, the nostril—or, rather, the base of the nose next the cheek—is almost sure to exhibit this appearance. In a front or three-quarter view, the flattening of the light down the front of the nose often makes that organ seem too broad and thick. Inversely, an exaggerated shadow may retire a part too much, as the eye under a very projecting brow or a hollow cheek, when too much top-light is used. In these and many other ways the features are thrown out of keeping, and the face distorted, in plain photographs; and examples in plenty lie before me, to show that the busy pencil can magnify and improve these occasions, to the point almost of the grotesque.

Such cheeks, chins, and noses never belonged to any human face, as are seen on some foreign cartes.

A third defect, hardly different from the last in result, is in the obliteration of detail that follows the pencilling. The modulations of a good plain photograph are infinite; no point so small but has its gradations, finer in an exquisite degree than the pencil's point can follow. The fine texture of the skin, and the delicate grading of shape, cannot be approached by the regular stipple of handwork, which only destroys them, and introduces in their stead conventionalities and a mechanical finish more allied to the polish of cabinet-ware than to art.

Here is our greatest danger, here is the snare into which some photographers of the old world have already fallen. The public is pleased and tickled with this formal, smooth prettiness. It is the next best thing to "clearness," apparently, but what a degraded remove from that truth which lies within our power!

The last danger I shall venture to point out is that of leaning too much on the pencil for effect; of merging the photographer in the retoucher; of saying "that will do if it is touched up a little." A true pride in our art will doubtless preserve most of us from this error.

There are cases, as of short exposure of children, where it may not only be allowable, but very praiseworthy, to be able to work up a negative that, untouched, would be useless. But shall the use of the pencil be limited to such exceptional instances? By no means. It does not follow that because of some subjects a photograph can be obtained presenting the truth in a form lovely almost as nature's self, that this is always or usually possible.

There is yet another consideration. People see their friends at home and themselves in the glass by a very different direction of light than the photographer uses. At home the light is from windows low at the side, from many apertures, rather than from one, and is soft, diffused front-light, for when we want to have a good look at our friends, we get between them and the window.

This light penetrates the hollows and recesses of the features, and shows them shadowless, removing in a measure the haggard look from a thin face, and hardly revealing the lines of care and age.

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* *Philadelphia Photographer.*

To obtain rotundity, many artists so light that the face s burlesqued rather than represented. This relief of the ace is by no means the artistically desirable thing that night be supposed. The cultivated eye requires the subject o be represented, not imitated, and revolts at being leceived into the idea that what is known to be a flat urface can paradoxically have projections. However suitble the stereoscope may be to give us topographical notions f things and places we have not visited, or to remind us f those we have, it is but an optical toy, and its illusions reate wonder rather than artistic joy. If the production of he rotundity of life was the apex of art, then a wax figure night be a very noble thing, and a coloured wax figure the ighest effort of genius; whereas the nearer such a work is lone to life, the more disgusting it is.

But this is rather aside from my object, which was to how that by forcing the relief of a picture, the usual and omelike expression of the face is neglected. On seeing hemselves so portrayed, many persons exclaim, with the ittle old woman, of whose somnolence our nursery rhymes ell us that the pedlar Stout had taken a base advantage, "This is none o' I!" and their friends confirm the verdict, ot being accustomed to seeing the features so illuminated, nd feeling that the most objectionable parts of the hysiognomy have been exaggerated.

Ruskin says that "every good picture has a certain flatness," though he does not mean a map-like flatness, but a uiet retiring effect, harmonious, and implying the best of uodelling. In almost the same passage he warns against ainting so that an arm, limb, or feature starts out from the anvas, simulating the reality of life.

Much more can be done to modify the defects of disagreeble features than many suppose. By perfect harmony in he chemicals, placing the sitter in a diffused light, full iming, and avoiding much intensity, glaring imperfections re reduced to a minimum, and then, but not till then, when ll the resources of the photographer have been exhausted, nd you can conscientiously say, "I can do no more," call n the pencil to remove, as far as may be, the unavoidable xaggerations of the negative.

The skin-spots, freckles, warts and moles, chemically too ntense, the wrinkles seen with the broad eye of the camera, he shadows under the brows, nose, and chin, and the ollow cheeks, all weak points in our art, by reason of the endency of the chemicals to overdo the lights, before the hadows are out—all these may be carefully stippled to a nore normal condition.

Nor is this all. An intractably stupid or surly expression nay be made rather pleasing by obliterating the puckers in he forehead and the wrinkles between the brows, separating hese latter a little, and arching them slightly; more sweetess given to the mouth by altering the curve of the lips; he eye rendered vivacious, when it is too dark, by touching n a catch-light at the top, and a softer transmitted light nderneath. In these, and other ways, a correct observer of hysiognomy can do much without departing from nature, or we must be careful to conform to the action of those nuscles that give a lively expression, in order to represent he subject, not, indeed, as at the unhappy moment of the gonized sitting, but more as he or she appears at home mong cheerful friends.

The argument some operators consider as exhaustive— Well, that is just as you looked when you sat!"—is seldom onvincing to the customer, and is founded on a limited view f the aim of portraiture and the capabilities of our profession.

It is, of course, impossible to indicate what may or what nay not be done in every individual case in softening sperities of the negative. This must be left to what good aste each operator can exercise.

The writer will feel satisfied if he has protested against he devil of formality, to which the profession seems in anger of being driven, in time to open the eyes of the nore earnest and enquiring among us, and thus hinder the buse of the opportunity for license now afforded us.

Most (and the writer sees the danger clearly, from having here one of these) will, at first glance, deem the highly-finished mechanism of the pencil, its pretty surface, superior to plain work; and perhaps it is better in many instances. But, on the other hand, few of us know what can be done with the camera and chemicals alone: of which the works of Adam-Salomon are undoubtedly the highest exponent. This truly *great* artist obtains his highest effects from the plain negative; and those who have had the opportunity of studying his productions will return lovingly to them with satisfied eyes, long after they have detected and wearied of the hypocritical conventionalities that at first seemed so beautifully "smooth and clear."

ADVANTAGE OF SILVERED AND WASHED PAPER OVER PAPER WHICH IS SILVERED ONLY.

Take a carte-de-visite plate with two pictures, both of which copy alike quickly; lay on one of them washed, and on the other unwashed, silvered albuminized paper, and expose them with a well-fumigated pad. In printing, it will be observed that the former is not quite so slow as the latter.

Take both pictures out as soon as the latter is of the strength required, without troubling yourself further regarding the intensity of the washed paper. Let both prints then, after the usual washing, be brought into the toning bath, left there for the same time, taken out together, and fixed in the same soda bath. When well washed and perfectly dried, if all besides be in proper order, a comparison will show that the picture produced on the washed paper is overdone, and has been too long in the gold bath, while the print obtained in the usual manner is of the normal strength and tone.

This proves that the print on washed paper reaches the required strength sooner than the other, which circumstance, particularly in short winter days, is of importance. That chloride of silver with nitrate of silver, treated with ammonia, when exposed, prints more quickly than chloride of silver alone with the last-named preparation, I admit; but what help to a photographer is a printing which is afterwards weakened by the effect of the gold bath?

The practical photographer will immediately perceive the advantage of a silvered printing paper, which, according to my experience, preserves its whiteness and sensitiveness perfectly for eight weeks after it has been sensitized. What photographer would not be glad to dispense with the daily repeated tedious work of silvering paper, who tones well, in the evening of a cloudy winter day, his few copies with the delight and affection for his work which all must have who follow our profession, and who can otherwise reckon upon success?

Sugar in the printing bath retards the paper from becoming yellow, undoubtedly, to some extent; but what think my colleagues of toning their prints as easily and beautifully after two or three days just as if they were excited and printed all on the same day? But on washed albumen paper they may be toned whenever a sufficient number of copies are got together, as circumstances require—in three or four days or weeks, if needs be.

The same quantity of gold with which one dozen are now toned will suffice for two dozen if washed paper be employed. The toning takes place very rapidly, and, if a warm brown tone be desired, the copies should be taken from the bath as soon as their colour changes. When placed in the fixing bath the pictures are, at the beginning, of a reddish yellow. The colours, however, change by degrees, and on this washed paper, after the washing and drying, take a peculiarly deep tone. In the deep shadows a green metallic lustre is observable, which changes into deep black so soon as the pictures are washed and rolled.

I have used the washed paper exclusively now in my operations for about three months. Further experience has taught me that the fumigating of the papers themselves is superfluous, provided the pads are well fumigated. Those I employ lie day and night in a chest which contains under a perforated false bottom a vessel of ammonia. The print and pad are taken out of the printing-frame, and in the place of the former a fresh piece of paper is brought, while the latter is exchanged for a freshly-fumigated pad out of the chest, made of felt, cloth, or paper. This takes place without any delay. Proofs which in the evening are not printed thoroughly remain in the frame overnight, to be further printed the next day.

With regard to the strength of the bath: as strong proofs may be obtained with a weak as with a strong bath, only, as a matter of course, the paper must remain much longer on the former than on the latter; all the chloride in the albumen layer can be changed thereby into chloride of silver. The weakest salted papers are naturally the cheapest, yet the chlorine contained in the albumen itself, with a solution of nitrate of silver, yields chloride of silver sufficient to produce a strong picture. It is only necessary, should the bath be used very weak, to add other salt or alcohol, to prevent the dissolving of the albumen.

I will remark, in conclusion, that I am scarcely ever plagued now with any small specks and points, on account of which I formerly was obliged to throw away many a good picture. As I have now worked for a long time with the paper referred to, I publish my experience therewith. Experiments have taught me that it is possible to produce a paper which not only exempts photographers from the trouble of sensitizing, but also from that of toning prints. Such a paper renders it possible to produce hundreds of prints perfectly alike in tone throughout.—*Photographisches Archiv.*

In commenting on this article in his *Bulletin*, Mr. H. T. Anthony says:—

"The above article, if found by experience to be correct, will go a great way towards relieving photographers of a serious trouble, especially in this country, in summer. I have ascertained, by careful experiment, that the turning brown of albumen paper, in hot weather, is produced by the penetration of the nitrate of silver solution through the albumen, and into the paper upon which it is spread—the action of the sizing of the paper upon the nitrate of silver, in a concentrated form, causing the brown colour. I have found that merely blotting off the excess of the silver solutions has a very material effect in arresting this tendency to turn brown, and it is but reasonable to conclude that the washing would be much more effectual. Many years ago, I tried washing off the silver solutions, but found that I could not get a decent print. That was before I discovered the value of ammoniacal fuming, and it is possible that the weakness of printing at that time may be entirely overcome by the use of the ammonia as advised. *Nous verrons.*"

PRINTS AND THEIR PRODUCTION.

BY S. T. DAVENPORT.*

Composition Photographs.—Let us return for a moment to the subject of photography proper. It may be urged by some that it is, after all, only a copyist's art, and, as such, has many limits placed upon its powers which the skill of the artistic draughtsman overcomes, but which the photographer cannot overcome. To this I would reply, by admitting that there is much in nature and in art which photography cannot be expected to copy. Mind acting on matter may change the condition under which natural objects are represented, but the camera cannot alter the condition under which nature is seen. Nevertheless, we must not come to conclusions too hastily as to the unfitness for, and inability of, the photographic artist to create by means of photography, as the artist does with his pencil and brush. Composition pictures have already been executed by some able artists, both from natural objects and human models, as well as copies of drawing executed by artists for the express purpose of reproduction photographically. The earliest attempt in this direction was made by Mr. O. G. Rejlander, in a picture entitled "The Two Ways of Life." It was produced in 1857, for exhibition at Manchester, and the means employed in its production and the picture are fully described by its author in the pages of the Photographic Society's Journal, April 21, 1859. The picture consists of thirty figures and a background, and was conceived and executed in six weeks. Each portion of the picture was separately photographed, and then the whole of the parts were printed in their respective positions, and were harmonised at the various points of junction by acting upon the sensitive paper by means of pencils of light.

Such was the first attempt at photographic composition; and I am able, through the kindness of Mr. Rejlander, and his friend Mr. Greenwood, of Liverpool, to whom the print belongs, to exhibit one of the original prints of that work.

Since Mr. Rejlander's picture was produced, we have had several works of a similar nature, and of great merit, presented to the public, among which, those from the studio of Messrs. Robinson and Cherrill claim priority, both as to date of production and number and variety of subjects. Mr. Robinson's first picture was issued in 1858, and was entitled "Fading Away." The subject was selected as being eminently unsuited to rendering by any ordinary photographic treatment, and was intended to illustrate the fact that other conditions than those of actual life could be illustrated by its means. This picture was soon succeeded by others, and much adverse criticism followed, based upon ignorance of the means of their production. To correct mistaken notions, and inform the public as to their mode of production, Mr. Cherrill, in January last, read a paper before the Photographic Society on the "Production of Composition Pictures," which paper will be found in No. 201, page 203, of that Society's Journal.

Messrs. Robinson and Cherrill have produced several most artistic works, some of which I am enabled, through their kindness, to exhibit this evening. The three pictures entitled "Returning Home," "The Sleepers," and "Over the Sea," show to what perfection they have now brought the art.

But fresh competitors are daily coming forward to claim the patronage of the public in this direction. Mr. J. Hubbard has issued two or three pictures, one entitled "Blighted Hopes," another "Stolen Moments." Of the artist's skill in the treatment and lighting of his subjects it is impossible to speak too highly; they are bright and full of colour, at the same time that they are quiet, and the tale they are intended to tell is easily read and full of interest. The pictures, by the kindness of Mr. Hubbard, are exhibited, and are, undoubtedly, the best of their kind yet produced.

The last work of this class to which I have to refer is full of interest from many other points of view. It is not only the last of the class produced, but it is also one of the largest. It also possesses an historical interest, and its interest is enhanced by the fact that the principal actor in the scene represented has recently passed away. Mr. McLachlan has just presented to the public a large picture, which includes portraits of all the members of the late Famine Committee which held its meetings at Manchester. Of that committee the late Earl of Derby was chairman.

I have thus endeavoured to show that the artist photographers not only have the will, but the power, of creating for the public works which possess the richness of colour and pictorial and artistic effects which have hitherto alone resulted from a laborious study, and translation of nature on to canvas by the artist painter.

From what I have said, it will be seen that we have now attained to a knowledge and use of the following modes of producing prints:—

1. By means of incised or indented surfaces, the design is produced in relief by pressure, and without colour of any kind.

2. By means of incised surfaces, a series of white lines upon a dark or coloured background are obtained by inking uniformly the entire surface of the block, and then removing the ink on to paper by pressure.

3. By means of raised surfaces, as in printing types and most wood blocks, in which the design alone is capable of being inked, such surfaces yielding impressions in black or coloured inks, by means of pressure.

4. By means of incised metal plates, the incisions in which are charged by rubbing into them one or more black or coloured inks, and then carefully removing all the superfluous ink from

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* Continued from p. 140.

the surface of the plate, after which it is covered with paper, and pressure applied.

5. By using the lithographic stone, and giving one portion of the surface of the stone an affinity for greasy matter, while other portions of the same surface are made to repel it; thus, when ink is applied and afterwards removed by pressure, flat tints or prints from simple lines are procured on the paper.

6. By using a series of surface blocks or lithographic stones, either separately or in combination, from which surfaces various tinted inks or gradations of colour are printed either separately or in combination, as exhibited in illuminated printing and chromo-lithographs.

7. By the photographic process, in which light, by acting upon the salts of silver or other bodies, decomposes them, and he image obtained in the camera is then fixed by subsequent chemical treatment.

8. By a combination of the lithographic and photographic processes, as illustrated by Mr. Griggs' specimen prints of ndian fabrics.

9. By a mechanical distribution or sealing of a mixture of arbon and gelatine, as in Mr. Walter Woodbury's process.

10. By the preparation of a uniformly dense film of black or oloured carbon and gelatine, and then submitting the film to he partial action of light, thereby fixing and changing the ondition of some portions of the film, while other portions remain unchanged, and are subsequently dissolved or melted out.

11. By using the gelatine, after it has been chemically prepared and submitted to the partial action of light, as a matrix, which is inked and printed from in a manner analogous to the ithographic process.

Let me now direct your attention for a few moments to the prints which are still produced by the processes in use a cenury since.

Engraving for literary and commercial purposes, I have tated, has been superseded by newer and cheaper processes of production; but from the first introduction of the art of engraving to the present time, there have been examples of higher aspirations by both artists and engravers, and greater powers of production than were needed for book illustration. But illustrations of literature, though, in the main, of a lower ype than the examples of art products I refer to, still served a useful purpose: they formed the training-ground on which oung and fresh aspirants for fame tried their skill, and learned o manipulate their tools and materials. I regret that that chool and training-ground no longer exists; and though I feel hat the productions of the artist and engraver have, up to the resent time, not been excelled or superseded by any of the new rt-products hitherto produced, still I cannot fail to observe hat it is probable that, at no remote period, engraving, like miniature painting, will have been swept out by the advances which the art of photography is now making. Let us hope that he result may, in the end, be favourable to the advancement f public taste. But so long as the art of engraving does exist, t is to be regretted that unprincipled persons, skilled in the ractice of modern arts, are to be found, who, by copying the works of the artist and engraver, which have been produced at reat cost, and, following in the steps of the hawkers of Hogarth's time, undersell the original producer, and thereby ob him of his just reward.

Hogarth found his works, as soon as published, pirated on all ands, and the Copyright Bill of George the Second's reign was passed to secure to the artist an exclusive right in the ork he had created, and, till a recent date, that right had not een materially jeopardised. But, within the last year or two, iracy has become so common among us, by means of photography, that the patrons of art are likely to be deprived of orks such as those now produced by Landsoer, Cousius, Doo, nd others, by the withdrawal of the capital and enterprise which has hitherto been invested in their production; and it is nly just to such persons as Mr. Gravos and others that their roperty should be protected by an improved copyright law—a w such as the Society of Arts has been, for the last two years, ndeavouring to introduce to the notice of the legislature, and nder which the artist and photographer separately, or in conection with the capitalist, would have their rights defined and rotected; and we might then look for a fresh and extended evelopment of commercial enterprise and art-patronage.

I feel that I owe you some apology for having detained you o long. I may perhaps be open to the charge of being an nthusiast, and of attaching more importance to reproductive art than the subject merits. But, if so, the fact is easily accounted for. My boyhood and early youth were spent amidst engravings—for many of you are probably familiar with the works of my late father, who was a contemporary of Finden, Heath, Le King, and other eminent engravers. Many of his productions are before the meeting. I was myself educated for the same profession, and before I became an officer of this Society (now more than twenty-five years ago) I practised the art for some time. Indeed, I may mention that I was one of the first to produce, by electro-deposition, copper-plates from engraved steel-plates.

These facts must plead my justification for what I have said, and it will appear not unnatural that I should continue to take a warm interest in every new process that may promise to give greater facilities to reproductive art, and thus to increase the means of affording one of the purest and best sources of gratification, not only to the rich, but to the people at large.

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VICE AND PHOTOGRAPHY.*

There are social evils which thrive by virtue of their very foulness, and social criminals who are assured a certain immunity by the very grossness of their avocations. It is pleasanter to blink a delicate question than to grapple with it, and those who are moralists by their profession are apt to still their consciences by arguing that to give publicity to certain matters is to engender or suggest a certain amount of evil. In some degree this is true, but there is a time for all things—a time to be silent and a time to speak out; and to decide on the comparative propriety of speech or silence is among the first responsibilities of the journalist. If we feel constrained to call attention to a novel phase of immorality, it is because we believe we can offer some practical suggestions towards arresting its development, and because we can at least press the claims of the agency which is labouring assiduously to counteract it.

It can be no secret to any one in the habit of reading the police reports that a large and lucrative trade is carried on in prints and publications of the most shameless indecency. We are sorry to add that it need be as little of a secret to those who study the advertising columns of certain widely-circulated journals. It was the existence of this shameful traffic that mainly called into being the Society for the Suppression of Vice; it was to the efforts and suggestions of that society we owe the passing of the statute popularly known as Lord Campbell's Act. Previously to that, the officers of the society were met by the initial difficulty that they had no power to seize the stock of dealers in obscenities. By that Act, on information upon oath before a magistrate, search-warrants could be issued for the seizure and destruction of obscene books, prints, &c., kept for the purposes of sale or publication. To a great extent the new Act answered the expectations of its authors, and it struck a heavy blow at the trade it was intended to suppress. Unfortunately, however, just as the society had begun to congratulate itself on its signal success, it found itself face to face with a new enemy. The nearly extinct trade took fresh vitality and developed itself, as we have said, in a new phase. The dealers in immoralities prostituted science to their purposes, and enlisted photography as their active ally. The old pictures were bad enough, but their very grossness and coarseness limited their sphere of evil. Innocence, or even tainted refinement, was more likely to be disgusted than attracted by the harsh idealization of the coarse fancies of a brutalized nature. It was obvious that as a rule such powers of pencil or brush as such publishers could enlist were likely to be of the very worst order; that their productions for the most part would be monstrous caricatures of nature, more likely to revolt the senses than to stimulate them. It is easy to see what a devil-send cheap photography was to these men. Given a photographer and a variety of models, and you at once have a life and a realism which appeal fatally, and sometimes under the mask of art, to the latent sensuality of human nature. You may shade off the "studies," from the simply suggestive through all degrees of the scandalous on to the diabolical. No need to risk shocking your shy clients at the outset; you feel the victim's pulse, and strengthen the dose of poison until the constitution absorbs it without shock or repugnance, although all this time it is becoming tainted in every vein and fibre. It is horribly startling to reflect on the amount of corruption that must exist in all classes of society under exteriors to all appearance candid and decent. Unhappily this is no speculative assumption; in the necessary relation of effects to causes we have the means of just calculation. We are in possession of facts equally unquestionable and abominable, and we are indebted to the researches of the society we have referred to for revelations that are shocking beyond all expression. The extent of the trade is demonstrated by the extent of the seizures that have been made without discouraging those concerned in carrying it on. If the society, labouring under the disadvantages of straitened means, and the difficulty of laying its hands on stocks that are carefully hidden out of sight, has yet succeeded in seizing 130,000 obscene pictures, 16,000 books, as many sheets of songs, and numerous other articles besides, we may form a conception of the number that must have been put it circulation. Against this constant risk of a dead loss, the dealers used to ensure themselves by the high prices they charged. In these days, whether we regard it as an advantage or not, their foul wares circulated amongst those who had the means of paying dearly for them, and the foulest was only within the reach of the youth of the richer classes of society. Now photography has popularized the trade, and merchants in obscenities attempt, and but too successfully, to organize their dealings with the million. It is proved, for instance, that one of the principal offenders was in the habit of making regular circuits through the country, stopping in the principal towns, and especially at the two universities. Photographs and stereoscopic slides are become constant articles of import from Germany, and numbers of Germans systematically travel the country in the trade, supplying the local dealers in the chief manufacturing and commercial towns. One of these men, who was recently convicted, declared that more that a hundred shops in the metropolis alone were supplied in this way. Among a lower class still a system of habitual *colportage* has been arranged. Women pedlars, who seek their customers among servant girls and women of the lower orders, find the sale of the most disgraceful indecencies by far the most lucrative part of their business. That once discovered, it is too evident how generally the practice is likely to be adopted; and with the facilities it offers of cautiously making your approaches, no woman's modesty is likely to escape a perilous ordeal. She may be slightly shocked at first, but she is too likely to be demoralized at last, and subjects trembling on the brink of indelicacy will make their way from the servants to the daughters of the household, and pave the road for worse. Then there is the profusion and audacity with which catalogues filled with foul details or disgustingly suggestive names are put in circulation. The Society for the Suppression of Vice have had specimens of these forwarded them from members of the universities, heads of families, and chaplains in the army and navy. If in so many instances these catalogues have come into the last hands they were intended for, we may conceive how many must have been sown broadcast. The last and most atrocious novelty in this way is a circular illustrated with miniature photographs of the larger obscenities to be forwarded on application.

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* *Pall Mall Gazette.*

We have said enough—we might have spoken much more fully and plainly—to show the magnitude of the evil and the nature of the circumstances that assure us of its further progress unless we can deal with it more sharply than we have done as yet—the profits are so great and the convictions so rare. The impulse and advantages given it by the adaptation of photography must spread the depravity by which it lives, increasing every day the area for it to work in, and the temptation to embark in it. We have said the convictions are rare, and we will add the penalties are small. For example, there was one most notorious scoundrel who, under various names, had for long flooded the country with his advertisements and catalogues. It was easy to obtain proof of dealing; the difficulty was to connect him legally with the act of publication. For a long time it was a match between him and the society, in which he kept himself invariably beyond the reach of conviction, pursuing all the time his scandalous traffic. He was trapped at last, and sentenced to twelve months' imprisonment with hard labour. On the expiration of that term he returned forthwith to his old trade, and of course with increased caution. For very long again he was successful, but a second time he was brought to justice, and on this occasion he was sentenced to two year's imprisonment and hard labour, being bound over afterwards in his own recognizances in £100 for six calendar months. Now it appears to us that the infliction of one year or two years' confinement on such a culprit is a mere playing with justice. He lives by systematic moral murder, labours with approved success at demoralizing the country wholesale, and is the cause of greater depravity and misery than the whole guild of murderers convicted in the course of a year. For the single offence brought home to him, he has committed tens of thousands of similar ones with absolute impunity. When you do catch such a wretch tripping, in the interest of the supreme safety of society you ought to make sure of him for all time to come: a hardened and persistent offender like this deserves seclusion for life. In any case he might be made to pay ruinously in purse and ignominiously in person. His infamous gains are enormous, and his detection ought to be followed by a crushing fine. It is known that at present the moderate fines inflicted are regarded as one of the incidents of the trade, and are amply covered by the high price set on the goods. If detection meant absolute ruin, with the alternative or addition of imprisonment for ten or fifteen years, we should hear much less of the traffic, we may rely on it. On sentencing the scoundrel we have instanced, the judge told him, very truly, that he left the court with the execration of all right-minded men. Very true it was, but the consciousness of that enters for nothing in his sentence or sufferings. If the judge had had the power to order him the flogging, by frequent instalments, which is meted out with such excellent effect to the much more harmless garotter, he would have made much more impression upon his hardened sensibilities. We have surely told enough to make out a case for more stringent legislation and more severe penalties; but, in the meantime, those who become alive to the necessity for action can do no better than help the Society that does much with little means.

This is an unpleasant subject, no doubt, and, before we leave it, we must touch upon another unpleasant point. We have frequently had occasion to comment on the vicious advertisements printed by some of our contemporaries. Incredible as it may seem, some of us assist this infamous traffic by advertising it. In *Bell's Life* we find the following, about which, we suppose, there can be little question:—"A thing of beauty is a joy for ever. Cartes-de-visite of beautiful women, 6s. 6d. per dozen; ditto, exquisitely coloured, 12s. per dozen; ditto, from life, 12s., 18s., and 24s. per dozen; stereoscopic slides, from nature, 3s. 6d. each." This is succeeded by another: "The secrets of nature fully explained, stereoscopic slides from nature, 38 stamps;" and by a third, which we decline to quote because it is still more suggestive. Can there be any doubt of the character of these slides, and the purport of these advertisements, if they are read in connection with what we have just written? In the *Sporting Gazette* we find one of the same individuals advertising; and, although it must be confessed that the advertisement leaves more to the imagination, still the nature of the advertiser's business is scarcely to be mistaken. We cannot, perhaps, be all of us active in the suppression of vice; but what are we to say of journalists who lend themselves to complicity with the most infamous offenders, and help them to the publicity they flourish by?

Correspondence.

THE SUN'S HEAT.

Sir,—Now it is universally allowed that the sun has motion in space, it appears to me there is no great difficulty in accounting for the way in which its supply of heat and light is kept up; and more, how it was the earth had at one period more, and at another less, heat than at present, without having recourse to insufficient and improbable causes, such as the distribution of land and water, and the alteration of the earth's axis.

The sun, by its enormous attracting power, must draw to itself those wandering masses of matter which we know to abound in space; and made up, as they must be, of the various elements of nature, it follows almost as a necessary consequence that when they arrive at the sun, and become heated to that extent they must be, a chemical combination will take place between them, with a disengagement of intense heat and light. Here, then, we have a source of heat of the most powerful kind, and, for what we know, with an infinite supply of fuel.

We also know matter is not equally distributed in space, but abounds in some parts and is scarce in others. Have we not then, the cause of the warm and cold periods of geological y, perfectly in accordance with reason and facts, and he most probable cause of the disappearance and reappear- of certain stars? It would require but little increase of un's radiating powers to make a great difference in the rature of the earth—great evaporation in the hotter ns, and great condensation in the polar, with its consequent gagement of latent heat. T. S. REEVES.

rch 2nd, 1870.

STATUS OF PHOTOGRAPHY.

,—I think the time has arrived for something to be done tect our interests as a profession, which has now become iversally recognized as any other industry.

have had Mr. Odger, the working man's candidate, here, has studied the subject very minutely, and as I was a good in his society I have come to the conclusion that the y of the Manchester school, that by free trade in prices, r, &c., would find its level, like water in pipes, is pretty layed out. I must confess I have hitherto acted on the iple, believing it to be correct, but an experience of seven has very much modified my views on the subject. er do I believe that the public are benefited by the mutual roat system at present in vogue.

hould think an association could be formed which, no , royalty would sanction with its name, as conditions of sion to which the candidate should go through an ex- ation previous to being entitled to put the letters F.P.S. or .S. (Fellow of the Royal Photographic Association), or ever other appropriate initials may be thought best. This y could then make rules, and fix minimum prices, &c.

tography has, I think, now unquestionably taken position of the fine arts; in fact, a knowledge of drawing seems almost indispensable to the production of a first-class graph; and yet, somehow, it seems to be almost the only g without any recognized status.

y I venture to express a wish that you will endeavour to is subject ventilated in your columns.—I am, sir, yours ently, HENRY WILCOX.

Park Street, Bristol, April 9th, 1870.

Proceedings of Societies.

PHOTOGRAPHIC SOCIETY OF LONDON.

usual monthly meeting of this Society was held in the itectural Gallery, Conduit Street, on the evening of day, the 12th inst., Mr. J. GLAISHER, F.R.S., in the .

vious to commencing the ordinary proceedings, the CHAIR- called attention to the fact that according to previous ucement the meeting would be made special to deal with stion concerning non-resident members. By a rule of the ty members residing abroad were not called upon to pay riptions. A resolution of the council in May, 1865, decided such members should not receive journals; and as all ers were bound by all regulations and bye-laws, as well laws of the Society, the resolution in question would n the position of all members. Some understanding red to have existed on this point, and the meeting was made special to confirm and give publicity to the resolu- o which he had referred.

minutes of the ordinary meeting were then read and med.

SECRETARY called attention to several specimens, gst which were photographs of the sun taken at Kew, ng the unusually large sun spots recently visible; a por- ransparency mounted on a solid block of glass to be used aper weight, and some fine examples of the collodio- de process on opal glass by Mr. Eyres, of Liverpool.

CHAIRMAN stated that Mr. Hughes's experiments not yet completed, his promised paper would be deferred until xt meeting.

SECRETARY read a paper by Dr. Anthony on the Photo- ic Atelier in 1870. This paper will appear in our next; s the discussion thereon without the details of the pro- studio would scarcely be intelligible, we defer the report next week.

Dr. MANN then read a paper on Mr. Browning's Stereographs of the Planet Mars, and exhibited several fine examples to members.

After some votes of thanks, and an intimation that Mr. Hughes would read his paper at the next meeting, that Mr. Morgan would exhibit some specimens, and that possibly Professor Wheatstone would read a paper, the proceedings terminated.

PHOTOGRAPHIC SOCIETY OF MARSEILLES.

A MEETING of the Society was held on the 16th ult., M. TEISSEIRE, president, in the chair.

The PRESIDENT introduced M. Harding to the Society, who briefly recounted the details of the Autotype process, and exhibited some specimen prints and tissue.

M. VIDAL described the various manipulations of the photo-enamel process, and demonstrated before the members the chief operations connected therewith. He recommended the method chiefly to the attention of amateurs, who would be able, after a little practice, to produce satisfactory results.

The same gentleman also exhibited some specimens of carbon printing upon vegetable parchment or *factice*. This material offered great advantages as a basis, and could be used either rough or polished; in the former state a very beautiful grain was obtained. The parchment in the present instance was obtained from MM. Schoffen and Co., of Dusseldorf, and could be manipulated with much facility, for when treated with water the material softened without absorbing the liquid.

M. VIDAL confirmed the assertion made by M. Taylor on a previous occasion that chloride of silver paper, if slightly discoloured by light before being placed under the yellow glass or screen of a photometer, was acted upon much more readily than fresh sensitive paper. He had placed a sheet of white sensitive paper in a printing-frame, covering one half of the material with black paper, and exposing it to light until the unprotected portion had assumed a slight creamy tone, scarcely perceptible except by comparison. The whole sheet of paper was then placed under yellow glass, and again exposed in a frame for a short time, the result being that the cream tint had changed to a dark grey, while the other half of the paper still retained its original whiteness. This phenomenon proves that the photometer cannot be used with accuracy by continuation, but that a fresh surface should always be exposed for each experiment.

M. JACQUEMET said that this fact could be made use of when rapid printing was desirable, or even for short exposures in the camera.

The proceedings then terminated.

Talk in the Studio.

CAUGHT NAPPING.—A well-known American photographer "took the cars" for home the other night, and, wearied with a long day's work in posing hard subjects for pictures, fell into a gentle doze. At the first station a lady entered, and stopping at the vacant seat by "R.'s" side, said: "Can I *sit* here, sir?" "Yes'm," said the half-aroused artist: "Full length or bust?"

PHOTOGRAPHIC PRIZES.—The following is the list of prizes offered by the Royal Cornwall Polytechnic Society for photographs in their forthcoming exhibition, which will open in September next:—First Section: for professional photographers—1, for the best composition landscape, a silver medal; 2, for the second best ditto, a bronze medal; 3, for the best untouched landscape, sky only printed from separate negative, a silver medal; 4, for the second best ditto, a bronze medal; 5, for the best untouched landscape, from one negative only, a silver medal; 6, for the second best ditto, a bronze medal; 7, for the best portrait or group, a silver medal; 8, for the second best ditto, a bronze medal; 9, for the best untouched enlargement, a bronze medal. The judges may decline to make an award in any of the above classes where less than three pictures are in competition in that class. Exhibits in this section are available as prizes in the Art Union of Cornwall. Second Section: for amateurs only:—Medals and prizes will be awarded by the society for meritorious productions in this department. N.B.—Carte-de-visite portraits are excluded from both sections of the photographic department.

Obituary.—Our readers will learn with regret the death of Mr. Restall, of Birmingham, whose admirable largo photograph of a group in marble, after Da Vinci's "Last Supper," was hung at the last exhibition in Conduit Street, and whose name is familiar as that of a producer of much good work in connection with photography.

A Good Varnish for Prints, etc., is made—a correspondent of the *Stationer* states—by eight parts of gelatine glue being mixed with one part alum, and half part Marseilles soap, in boiling water. The glue being first well dissolved, the alum and soap are added; all is then well boiled, and afterwards strained and filtered. This varnish will protect the objects from damp, and is perfectly waterproof.

Mounting Photographic Scraps.—The *Stationer* describes a novelty called "The Strephotoscope, invented by M. Ernest Camus, of Paris, which is intended to unite photographic scraps in the form of a rose. The photographs are fixed between two discs, that cause them to revolve by means of a catch and a roller, moved by a button in the handle. The Strephotoscope is said to possess great advantages over the album, as it is not so heavy, only requires the use of one hand, and forms a beautiful ornament when placed on a pedestal, or attached to a ring in the wall."

Royal Cornwall Polytechnic Society's Report.—The following report of the judges in relation to the photographic department in last year's exhibition will be read with interest: "The judges have great pleasure in bearing their testimony to the marked advance of this beautiful art, as exhibited by the specimens now on the walls of our exhibition, this year's display being far superior to those preceding, both as regards artistic feeling and photographic manipulation. There being such a collection of really high-class pictures, 'works of art,' and produced by such varied processes, and on such different materials, and the results being so very good, and owing to the limited number of medals offered by the Society (viz., four, two silver and two bronze), the judges have experienced the greatest difficulty in selecting the best; but they were helped out in a great measure by the committee allowing (at their suggestion) extra medals as special prizes. Next year a greater number of classes is proposed, to meet all varieties of composition in figures and landscape, also of manipulation and material. The first silver medal has been awarded to Mr. Slingsby, for his beautiful portrait of a gentleman, No. 448. The judges would have awarded a silver medal to his excellent compositions in landscape, but owing to the number of extra medals given they could not. Mr. N. Briggs, of Leamington, is again an exhibitor of some very excellent works, but having received a medal last year is excluded, by the rules of the society, from having one on this occasion.* The first silver medal for landscape was awarded to Mr. George Wardley, of Manchester, for his fine picture No. 503. The second prize for landscape, a first bronze medal, was awarded to Mr. Brookes for his excellent and artistic landscape, No. 467. Mr. Brookes has exhibited several very beautiful views taken near Penzauce and Poltesco; he has also sent a negative (with a print) of an eclipse of the sun; it may be seen on the left in the gallery. Col. Stuart Wortley has a special first silver medal awarded him for his magnificent large studies of heads, especially No. 454; and Mr. La Fosse, for his case of photographs, has a first bronze medal. Mr. T. Hubbard, of London, is awarded a first bronze medal for his figure subjects, which are very fine indeed (note 475, also 474, 'Preparing for dinner'). A special first silver medal is awarded to Mr. A. L. Henderson, of London, for his case of exceedingly beautiful photo-enamels. There are some excellent cases of portraits and landscapes by the following artists, which will amply repay study, viz.:—No. 417, and 422 to 424, by Messrs. Fradelle and Leach, Regent Street, London, also 411, by Mr. W. Englaud, a case of views on the Tyrol—very fine indeed; and a case of portraits, No. 461, by Mr. W. H. Dunstan, of Falmouth; also a case of photographs by Warwick Brookes, of Manchester, No. 462—the heads are really fine; and a case by Eccles—very good. Mr. Row, of Redruth, exhibits two cases of good portraits, Nos. 487 and 488; and Mr. E. Cocking has sent some exceedingly fine portraits, Nos. 493 to 498; we hope to see more next year from him. In the amateur department there are not so many exhibitors as we could wish, but Mr. Brownrigg has sent several very excellent specimens of river scenes, &c. (see No. 544—the others are from No. 541 to 549; a second silver medal is awarded to those pictures). Mr. Henry Cox, of Cadgwith, has a second silver medal awarded to his charming artistic studies (see No. 552.) Mr. Tregaskis has a second bronze medal for his case, No. 550; these pictures are very good. There are other photographs not for competition, viz., a portrait of Mrs. T. Phillpotts, of Porthgwidden, No. 480; this picture is very soft and life-like, and not to be excelled by any in the exhibition; it is taken by Hanfstaengl, of Dresden. Attention is also drawn to the screen of views in the Holy Land, sent by the committee of the "Palestine Exploration Fund," No. 834. No. 473 is an enlarged photographic portrait of the late Mr. Tilly; it is finished in crayon by the London Stereoscopic Company, and is very life-like.

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* This was a misapprehension, and an extra first bronze medal was subsequently awarded to Mr. Briggs.—Ed.

To Correspondents.

G. E. A. (Cheltenham).—We regret that we are unable to recommend such assistance as you require.

C. Stackeman.—The collodio-bromide process, which is, we presume, that to which you refer, is a dry-plate process. 2. It requires an exposure of three or four times as long as the wet collodion process. 3. Alcohol of 95 per cent. contains 95 parts of absolute alcohol and 5 parts of water in 100. The sp. gr. at 60° Fah. is about ·809. The collodio-bromide is better made fresh, but will keep a short time. Of course it must be kept from actinic light.

Oxoniensis.—As an example of instantaneous portraiture the print enclosed is very good indeed.

Venator.—The copies of prints enclosed are manifestly illustrations to Milton's *Paradise Lost*.

Farringdon Lane.—As we have not met with the defects you name, it is difficult to prescribe a remedy, except such as general considerations may suggest. The discolouration of the film when the preservative is applied suggests insufficient washing, and the consequent presence of some free nitrate, and this cause would also tend to the subsequent fog. This is a more probable cause of the defect than any imperfection in the gallic acid, which, however, may be deteriorated with long keeping. Care in the washing, care to avoid adding too much silver with the developer before applying it to the plate, and, if necessary, the use of a little more acid, are the chief remedies we can recommend.

B. M. P.—The prints enclosed are manifestly from very weak negatives, and hence the flatness and imperfect tone of which you complain. Rich tones can only be obtained when good negatives are employed, and any attempt to get deep black tones will issue in the blue slaty tone of your present prints. As a rule, we prefer the acetate bath for warm tones. There is, of course, a difference in samples of paper, but we cannot in this column recommend that of any special manufacturer.

Pythagoras.—Methylated spirit will do perfectly well to add to a nitrate bath. Methylated finish, which is methylated spirit with a little shellac added, may be used if you cannot procure methylated spirit readily. 2. The specific gravity will, of course, be altered by the addition, and so falsify the registration of the argentometer; but in any case the argentometer ceases to register very correctly with an old bath. Mr. Wilson's method of quantitative estimating the strength of a silver solution on p. 115 of our last Year-Book will be found useful.

Photo (Ashton).—The comet-like spots may proceed from various causes, but two are most probable: the use of turbid collodion, or the use of new collodion containing chiefly iodide salts. Let the collodion settle well, or add at the rate of half a grain of bromide of cadmium to each ounce; or, rather, make this addition first, and then let the collodion settle well. See that your nitrate bath is not turbid, and that your plates are perfectly clean. Sometimes such spots arise from rough spots on the glass, especially after nitric acid has been used to clean the glass.

Thomas Gulliver.—Thanks. The copy has been received, and, so far as we remember, acknowledged. The insertion will commence shortly. Photograph of camera received. We shall look with interest for the description.

Several articles are again compelled to stand over until our next.

Several Correspondents in our next.

⁂ All photographs forwarded to the Publisher for registration receive attention at once; but the pressure on our space sometimes compels us to defer the acknowledgment in this column. It should be borne in mind, therefore, that non-acknowledgment at once does not necessarily imply non-receipt or non-registration.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

	PAGE
Annual International Exhibition, 1871	181
Stability of Chromated Gelatine.—Permanency of Carbon Prints	182
Obituary.—M. Niepce de St. Victor	183
Cartographic Applications of Photography	183
American Studios	184
American Correspondence	185
The Photographic Atelier in 1870. By John Anthony, M.D.	186
Alcoholic Collodion for Hot Weather	188
Correspondence.—Free Trade in Photography—Dr. Liesegang's Description of a Process after Salomon—Competition and Low Prices	188
Proceedings of Societies.—Photographic Society of London—South London Photographic Society	190
Talk in the Studio	191
To Correspondents	192

ANNUAL INTERNATIONAL EXHIBITION, 1871.

N May the 1st, 1871, the first of a series of annual inter- ational exhibitions will be held, the contemplated features which will possess much interest for photographers for veral reasons. The exhibitions will be devoted to the isplay of "selected works of fine and industrial art and ientific inventions." It is to be noted that the works xhibited will be "selected," the aim being to confine the isplay to such works as worthily represent the present osition of the various works of art illustrated, and such will contribute by their exhibition to elevate the art ste of visitors. With this end in view, a twelvemonth's otice is not too long to enable all disposed to exhibit to repare their best and most worthy work. Photography ill, in this exhibition, occupy its legitimate position in e fine art division.

The exhibitions in question will be held under the direc- on of the commissioners of the exhibition of 1851, who, t of the surplus income of that exhibition, purchased the ensington Gore Estate, upon which the buildings for the rojected exhibitions will be held. No rent will be charged exhibitors, and glass cases, &c., will be provided free of st. No prizes will be awarded, as the acceptance of ach work will be regarded as a guarantee of merit, and certificate of such acceptance will be awarded to the xhibitor. Prices may be attached to objects exhibited, d agents will be appointed by the commissioners to tend to the interests of exhibitors. Especial attention called by the commissioners to one distinctive aim in this hibition; namely, their desire to give prominence to orks of art devoted to purposes of use. "Hitherto," ey remark, "the exhibition of works of fine art has been o much limited to the display of pictures and sculpture, ssociated from purposes of utility; and it may be doubted hether a picture on enamel or on pottery, destined to be pplied to a piece of furniture, or a sculpture in wood tended for a picture-frame, however great its merits, ould find any place in the exhibitions of the Royal cademy of London, or in any of the numerous other ex- ibitions of the works of artists. Still less would a Cash- ere shawl or a Persian carpet, the chief excellence of hich depended upon its combination of colours, find in y of these exhibitions its proper place. Such a complete separation of artistic work from objects of utility ay indeed be said to be only the characteristic of modern mes, for in the ancient and mediæval periods the highest t is to be found in alliance with the meanest materials of anufacture. The Etruscans painted on vases of clay sub- ects which still charm us by their beauty of composition nd skilful drawing; and the finest works of Raffaelle were esigned as decorations for hangings to be made of wool. ntended that these exhibitions shall furnish the opportunity of stimulating the revival of the application of the artist's talents to give beauty and refinement to every description of object of utility, whether domestic or monumental."

The first annual exhibition will consist of four classes; namely, 1, Fine Arts; 2, Manufactures; 3, Scientific Inventions and Discoveries; 4, Horticulture. The fine art division will comprise:—

Class 1. Painting of all kinds, in Oil, Water Colours, Distemper, Wax, Enamel, and on Glass, Porcelain, Mosaics, &c.
„ 2. Sculpture, Modelling, Carving, and Chasing in Marble, Stone, Wood, Terra-Cotta, Metal, Ivory, Glass, Precious Stones, and any other materials.
„ 3. Engravings, Lithography, Photography, &c.
„ 4. Architectural Designs, Drawings, and Models.
„ 5. Tapestries, Carpets, Embroideries, Shawls, Lace, &c., shown not as Manufactures, but for the Fine Art of their design in form or colour.
„ 6. Designs for all kinds of Decorative Manufactures.
„ 7. Copies of Ancient or Mediæval Pictures, Mosaics, Enamels, Reproductions in Plaster, Fictile Ivory, Electrotypes of fine ancient Works of Art, &c.

We make the following selection from the announced regulations:—

The arrangement of the objects will be according to classes, and not, as in former International Exhibitions, according to nationalities.

One-third portion of the space in each class will be assigned to such foreign exhibitors as shall obtain certificates for the admission of their objects from their respective governments. Foreign countries will appoint their own judges. The remaining two-thirds of the space will be filled with objects produced either in the United Kingdom or abroad, and sent direct to the building for the inspection and approval of judges appointed for the purpose. Objects not accepted for exhibition must be removed according to notices to be given, but no objects exhibited can be removed until the close of the exhibition.

All objects must be delivered at the building, into the charge of the proper officers, unpacked and ready for immediate exhibition, and free of all charges for carriage, &c.

No rent will be charged for space, and Her Majesty's Commissioners will provide large glass cases, stands, and fittings, steam and water power, and general shafting, free of cost to the exhibitors, and, except in the case of machinery, carry out the arrangement of the objects by their own officers.

Her Majesty's Commissioners will take the greatest possible care of all objects, but they will not hold themselves responsible for loss or damage of any kind.

Prices may be attached to the objects, and exhibitors will be encouraged to state their prices. *Agents will be appointed to attend to the interests of exhibitors.*

Every object must be accompanied by a descriptive label, stating the special reasons, such as excellence, novelty, cheapness, &c., why it is offered for exhibition.

Due notice will be given of the days for receiving each class of objects, and to enable the arrangements to be carried into effect, strict punctuality will be required in the delivery of all contributions, both foreign and British. Objects sent or brought after the days appointed for their reception cannot be received.

Reports of each class of objects will be prepared immediately after the opening, and will be published before the 1st June, 1871.

Each foreign country will be free to accredit an official reporter for every class in which objects made in such country are exhibited, for the purpose of joining in the reports.

Prizes will not be awarded, but a certificate of his having obtained the distinction of admission to the exhibition will be given to each exhibitor.

A catalogue will be published in the English language, but every foreign country will be free to publish a catalogue in its own language, if it think fit.

An important and valuable feature of the forthcoming exhibition will be the complete and interesting catalogue which will be prepared, and of which some examples are given in the programme already issued, the entries being selected from old catalogues to illustrate. We select the following:—

ENGRAVINGS, LITHOGRAPHY, PHOTOGRAPHY, ETC.

ENGRAVINGS.

Engravings. Exhibitors' Names.

72 The Dispute, after Raphael (line engraving). 1,200 francs... ... ... *F. KELLER.*
Prussia. *Professor in the Academy of Dusseldorf.* Born at ; pupil of : Grand Prize, 1867.

73 The Countess of Bedford, after Vandyke. *F. H. ROBINSON, R.A.*
England. *New Grove, Petworth.* Born at Bolton, Lancashire; pupil of James Heath; Engraver to Her Majesty; Member of the Imperial Academy of St. Petersburg: First Class Medal, 1855.

74 Twelve Illustrations of the Parables of our Lord, after J. E. Millais, R.A. Engraved on Wood by ... ... *DALZIEL BROTHERS.*
England. 110, *High Street, Camden Town, London.* Born at Wooler, Northumberland.

LITHOGRAPHY.

Lithography.

75 The Crowning of the Virgin, after the picture by Fra Angelico, in the Louvre ... ... *A. FRANCOIS.*
France. 56, *Avenue de Breteuil, Paris.* Born in Paris; pupil of M. Hewisquel: First Class Medal, 1851; Grand Prize, 1867.

PHOTOGRAPHY.

Photography.

76 Photographs and Reproductions in a frame. *R. J. BINGHAM.*
France. 58, *Rue de la Rochefoucauld, Paris.* Born at ; pupil of : Medal, 1862; Grand Prize, 1867.

77 Photographs in one frame ... ... *A. BRAUN.*
France. *Dornach, Haut Rhin.* Born at ; pupil of : First Class Medal, 1855; Medal, 1862; Silver Medal, 1867.

78 Photographic Plates for Engraving and Printing; Engraving on Glass; Photographic Enamels; Photographs by the Carbon Process in one frame. *H. GARNIER.*
France. 8, *Rue du Pourtour de l'Eglise-Grenelle, Paris.* Born at ; pupil of : Medal, 1862; Grand Prize, 1867

79 Photographically Engraved Plates and Prints from the same ... ... *J. W. SWAN.*
England. *Underhill, Low Fell, Gateshead-on-Tyne.* Born at Sunderland; pupil of : Silver Medal, 1867.

STABILITY OF CHROMATED GELATINE.—PERMANENCY OF CARBON PRINTS.

It is very natural and very legitimate that the photographer called upon to abandon one process on account of its instability—or, rather, as some maintain, on account of its uncertainty of permanence—should enquire very carefully into the grounds of the alleged permanency of the process which is to supersede that to be abandoned. To the majority of photographers, we apprehend, the *prima facie* evidence of the permanency of carbon prints is so strong that few doubts are, we believe, entertained. But there are others—and to such the photographic community are much indebted—who, adopting the Apostolic injunction to "prove all things," that they may "hold fast that which is good," enquire minutely into the nature of the materials, and the reactions which they are called upon to accept as the basis of stability. That such enquiries should be made, and that satisfactory answers can be supplied, is fortunate for all interested in the future of photography.

At the last meeting of the South London Photographic Society, the stability of carbon prints came in question in the course of a general discussion on the subject, when Mr. Hart, an experienced photographer, to whose chemical knowledge and mechanical skill photographers are indebted for many ingenious appliances, expressed a doubt of the stability of material of carbon prints, based chiefly on the fact that chromic acid was as likely to be left in a carbon print as hypo in a silver print; that it was an exceedingly powerful oxidizer; and that organic substances acted upon by such agents were very apt to perish, leather, as a close analogue to the substance of the carbon print, being mentioned as an illustration.

The objection is an ingenious one, but is clearly based on an insufficient examination of the reactions which take place. To examine the reaction, it will be better to take for inspection a film of gelatine containing bichromate of potash or chromic acid, without admixture of pigment. This film, when exposed to the action of light, loses its bright yellow, and acquires a brown tint, due to the liberation of chromic acid and the formation of the brown oxide of chromium. This brown oxide of chromium is insoluble in water, by which, however, it is readily decomposed. If the film, rendered brown by light, be soaked a short time in water, it is decomposed, and loses its brown tint; chromic acid is dissolved out by the water, and a film remains of a pale green tint, green sesquioxide of chromium remaining in combination with the gelatine, which is insoluble in virtue of the combination. If, now, this pale green film be submitted to the action of an oxidizing agent, such as a solution of hypochlorite of lime or peroxide of hydrogen, the oxide being again converted into chromic acid, it again becomes soluble, and the gelatine acquires its original condition of complete solubility.

A recognition of the facts involved in these reactions will at once dissipate any such idea as that suggested by Mr. Hart. The carbon print in the process of production undergoes the first part of the reactions we have described; and when the development is completed, it consists of a thin layer of pigmented gelatine made insoluble by combination with a trace of sesquioxide of chromium. The absence of chromic acid is guaranteed by the simple fact that all portions of the film containing unchanged chromic acid are soluble, and must be removed by washing in the process of developing the image. The process of development consists of washing away the unchanged gelatine and unchanged chromic acid, or acid salt. The possibility of obtaining a picture depends on the image itself being insoluble; and, so long as chromic acid remains, it cannot be insoluble, insolubility depending on the chromic acid having been changed by light, so as to part with oxygen and become a chromic oxide. The absence of chromic acid is assured, then, by the fact that the presence of chromic acid involves solubility, and the production of a picture at all depends on the insolubility of the material forming it; and if this necessity had not existed the case would not have furnished any analogy to the difficulty of removing hypo or sulphur compounds from silver prints, inasmuch as the presence of hypo gives no indication whatever to the eye of its presence in the print until it has done injurious work, whilst the presence of chromic acid in a print would be rendered manifest at once by its vivid colour, and would of necessity condemn the picture at the moment of its production as imperfect.

The analogy of the material of carbon prints to leather is not quite perfect, but it is sufficiently so for general arguments; and leather is certainly not a readily perishable material. It may be destroyed by constant subjection to destructive agencies, but it is very durable, as the covers of old books often testify. Vellum or parchment—to which the material of the carbon print bears a still stronger analogy—although not indestructible, is the most stable substance for documentary purposes which is known to exist. The sizing material of paper—which perhaps presents a better analogy still, because it is like the substance of the carbon print applied to paper, and, in proportions, forming about an equal thickness—has not been known to perish or decompose in the case of any book or document kept for centuries with ordinary care.

The stronghold of the objection to the stability of the carbon process is found in the fact that a few of the earlier examples of Swan produced on a collodion tissue, and imperfectly mounted, or transferred at an experimental period in the history of transferring processes, blistered or peeled. Such facts in no wise bear on the process as now practised, however, any more than the fact that a picture of any kind mounted with india-rubber is apt to leave its mount militates against the value of the picture or the process by which it was produced. The important fact mentioned at the meeting of the South London, that notwithstanding carbon printing has now, in various stages, been a dozen years before the public, no one has ever seen a faded carbon print, should be tolerably satisfactory to those who, declining theoretical consideration, await the test of experience as to whether carbon prints are, as alleged, absolutely permanent photographs.

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OBITUARY.—M. NIEPCE DE ST. VICTOR.

Photographers generally will learn with regret the death of a distinguished exponent of their art, in M. Niepce de St. Victor. He died suddenly, at his office in the Louvre, from apoplexy, at mid-day on the 7th inst., having been perfectly well in the morning. One of the most indefatigable and skilful of experimentalists, he has contributed largely to the progress of photography, and has, in various instances, been the originator of distinct branches of the art. He was unquestionably the practical originator of photography on glass plates, for although Sir John Herschel's experiments with glass plates coated with films of precipitated silver were prosecuted in 1839, it was not until the introduction of albuminized plates in 1848 that a practical process on glass came into use. One of the most interesting phases of photography with which M. Niepce de St. Victor's name is associated is heliochromy, which, since the earlier labours of Becquerel, he has made almost entirely his own, some of his examples having been exhibited in the last international exhibition in Paris, affording an opportunity to the public of examining photographs in colour, a privilege which had before been only accessible to a favoured few. Amongst the processes out of the beaten path of photography with which M. Niepce de St. Victor's name is associated we may mention photo-engraving; experiments with salts of uranium as photographic agents; experiments with what he termed "stored-up light," and other new actions of light; photography without salts of silver, and various other processes in the by-paths of photography. M. Niepce de St. Victor was at the period of his death seventy-two years of age.

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CARTOGRAPHIC APPLICATIONS OF PHOTOGRAPHY.

We have before us a most valuable report on the cartographic applications of photography, by Lieut. J. Waterhouse, of the Royal Artillery. The volume contains the most complete and valuable statement we have seen, not merely of the application of photography to this special branch, but also of the various mechanical printing processes employed throughout Europe in mutiplying the maps and topographical documents connected with the survey departments of various European governments. The history of the volume is briefly this: Lieut. Waterhouse having been appointed to the superintendence of the photo-zincographic operations in the Surveyor General's Office at Calcutta, was shortly afterwards compelled to return to this country on sick leave. Zealously interested in his art, he resolved, whilst in England, to go through a practical course of photo-zincography at the Ordnance Survey Office at Southampton, and other establishments in this country where cognate processes were in operation, and subsequently he obtained the authorization of the Secretary of State for India to visit the topographical departments of the various continental governments, and such other establishments in the principal continental cities as might afford information and experience in connection with photo-mechanical printing processes. Accordingly he spent some months visiting the most important establishments in Paris, Brussels, the Hague, Gotha, Leipsic, Berlin, Dresden, Vienna, Munich, Neuchatel, Geneva, Berne, Dornach, and other continental cities, and the report before us contains the information acquired during these visits, most ably and clearly stated; and, as we have already observed, it constitutes the most complete and trustworthy digest of the various methods of photo-mechanical printing in existence.

Our Eleventh Volume contains a valuable series of practical articles on photo-zincography, by Lieut. Waterhouse, the result of his own experience and of his observations at the Southampton establishment, and it was his intention to prepare some details for our pages of what he saw at the various continental photographic and printing establishments. His return to India having put this project aside, he has favoured us with the copy before us of his report to his department, from which we shall from time to time make extracts which will interest our readers. The details of the various processes, although in many cases necessarily brief and condensed, possess especial value, from the fact that they are stated by an observer who had a practical familiarity with the class of operations he witnessed, and that the credentials with which he was furnishad gave him unusual facility of access to much information which might not have been available to many others.

The operations in connection with the production of negatives does not appear to have varied much in different establishments, and, except where some noteworthy or unusual practice obtains, we shall not refer to this part of the report.

At the *Depot de la Guerre*, in Paris, an extensive and well-managed photographic branch appears to exist. The negative operations very closely resemble those employed at Southampton in producing negatives of similar subjects; that is to say, a bromo-iodized collodion is employed containing about five grains of soluble cotton, four and a-half grains of mixed iodides (cadmium and ammonium), and one grain of similar mixed bromides to an ounce of collodion; a fifty-grain nitrate bath; a thirty-five grain iron developer; cyanide fixing; a pyrogallic and silver intensifier, followed by bichloride of mercury and sulphide of ammonium. Stains or over-intensity are readily removed by the application of dilute acetic acid; and a dilute solution of gum is always applied before drying, an application which serves as a varnish if a few prints only are required, and also serves to protect the negative from being lowered or injured by any subsequent varnishing operations. The printing process employed in this establishment is a rapid development process, similar, Lieut. Waterhouse believes, to that used in Brussels, which he described in our Eleventh Volume. Many experiments had been made in the department with a view to introducing photo-lithography, but it had not been able to answer so well as the rapid silver process in question. We will allow Lieut. Waterhouse to state the results of his general observations on the practice of various photo-mechanical printing processes in Paris in his own words:—

"PHOTO-LITHOGRAPHY IN PARIS.

"Photo-lithography has been but little practised in Paris. Several experiments have been tried at the Depot de la Guerre, but it is not practised there at all, and, as far as I could ascertain, the process is only worked professionally by two individuals, M. Lomercier and M. Marie, both of whom I visited.

"M. Lemorcier kindly gave me general indications of his method. He purchased the patents of Poitevin, and works his process, which depends on the reactions of bichromate of potash upon gelatine, &c., under the influence of light, and is very similar to the processes already in use in England. I was unable to see the working of the process, as the chemicals were out of order on the day M. Lemercier appointed for an experiment, and I had not another opportunity. I do not think he uses the process to any great extent.

"M. Marie works in an entirely different manner, and confines himself to the reproduction of subjects with half tones. He showed me some exceedingly fine specimens of his process, closely resembling the original photographs.

"He uses three or four stones for each subject, and thus obtains the necessary gradations. I believe he works with asphaltum; and, after the development of the images on the stones, they are gently rubbed, so as to give pictures of different degrees of intensity with a very fine grain. He showed me the stones for a portrait, but they did not indicate much. He says he can print 2,000 copies from the stones. The process gives beautiful results, but cannot be considered of very practical utility: in the first place, because it is a secret; and in the second, because it depends very much for success on artistic skill and dexterity, which M. Marie possesses in a high degree."

"Photographic Engraving.

"The art of photographic engraving has been carried to a high pitch of excellence in Paris, where it appears to have been more extensively practised than in any other city in Europe. Exceedingly fine results have been exhibited by MM. Niepce de St. Victor, Amand Durand, Garnier, Placet, Baldus, and Drivet. I visited them all; and received general indications of their processes, which I will describe separately.

"*Niepce de St. Victor's Process.*—M. Niepce de St. Victor, Commandant of the Louvre, nephew of Nicephore Niepce, the originator of photographic processes, has worked out and made many improvements in the processes made known by his uncle, and has published the details of his process in a work entitled 'Traite pratique de gravure heliographique sur acier et sur verre. Paris, Vistor Masson.' It is unnecessary to describe the process here, as it is well known, though not practised, in England; suffice to say that he makes use of a thin varnish of bitumen of Judea, the image formed upon which, after exposure to light, is developed with suitable solvents, and the plate bitten in with acids. He showed me some very good specimens of the process, consisting of copies of pencil drawings, and some copies of maps, &c. He said the process required a great deal of experience and practice before success could be attained, and that it was absolutely necessary that the materials should be of the proper quality and preserved from light. A great deal depends on the quality of the bitumen, and it is very difficult to obtain the true bitumen of Judea."

"*M. Durand's Process.*—I called upon M. Durand to renew the acquaintance I had made with him during my visit to Paris, 1867. In my opinion, he has produced the finest photo-engravings in line that have yet been seen, excepting, perhaps, those executed at the Royal Printing Office, Berlin. His process is a modification of that of M. Niepce de St. Victor, and consequently he works with asphaltum. He kindly showed me several of his latest productions, both for plate and surface printing, among them some excellent reproductions of maps, and gave me a few hints on the working of the process, but without going into details. He told me that, in the first place, all depended upon the cleaning of the copper plate; which should be cleaned at the moment of using with charcoal, or with solution of potash, till it will show no trace of greasiness when water is poured on it. The bitumen may be applied in solution or by dabbing. The solvent should be benzine alone, nearly saturated with bitumen; the object of this is to weaken the action of the benzine, so that it may not be so liable to dissolve the altered parts. The plate should be placed in a dish, the solvent poured over it, and allowed to act *slowly*. It is better not to develop the plate the same day as it is exposed to light. In the biting in, the great difficulty is to bite the dark lines sufficiently, and yet preserve the fine lines. Finally, he impressed upon me the necessity for working *slowly* in all the operations."

"*M. Garnier's Process.*—M. Garnier is one of the cleverest photo-engravers in Paris. He obtained the gold medal at the Exposition in 1867, and has produced some very beautiful works in half tone. He received me very courteously, but would give me no inkling of his process. He showed me some fine specimens in line and half-tone, and some exceedingly good cliches, which were almost all transmitted positives. I have an idea that his process is similar in principle to Fox Talbot's process of photoglyphy—that is to say, that a film of bichromated gelatine on a metal plate is exposed to light, and then treated in such a manner as to withstand the effects of the acid solution used for biting in. The plate is then bitten through the film, and the biting agent acts on it in proportion as the film has been acted on by light, the protected and soluble parts being bitten deepest. He works on steel, and his prints have some resemblance to those produced by Fox Talbot's process in the extreme delicacy of the grain. The above, however, is only a conjecture, as I received no information on the process. For working in winter or in wet weather he uses an electric light apparatus.

(*To be continued.*)

AMERICAN STUDIOS.

Messrs. Kilburn Brothers' Stereoscopic Establishment.

We have, from time to time, given our readers details of various noteworthy American studios. We now subjoin extracts from descriptions in our Philadelphia contemporary of two American studios, in which some points of interest and instruction may be found. The first is the studio of Messrs. Kilburn Brothers, Littleton, N. H. It is chiefly devoted to the production of stereographs on a large scale for publication, and the premises are chiefly fitted for carrying out printing operations on a large scale. It is noteworthy that these printing operations are almost entirely the work of young ladies, but one male assistant being employed in the establishment:—

"The building is three storeys high. The lower floor is divided into four rooms: the back one, facing south, has four windows, at which the printers are stationed; next to it is the silvering-room; next, the toning room, in which the fuming-box is also placed; and the front room is the wash-room. In the latter there are eight or more tanks 5½ feet long by 18 inches wide, and 5 inches deep. These tanks are placed in rows of two each, each row a few inches lower than the one above it, so as to give a fall to the water. They are fed with water by a constantly running mountain spring. The water enters at the end of the upper row, passes through down into the next, and so on to the last, and finally out at the waste-pipe, so it will be seen that it is constantly running and changing, and the prints thoroughly washed by the purest of water.

A one-storey building at the side of these rooms is stored with wood, which is largely needed during the cold winters they have in New Hampshire.

The second floor is entered from the street, and the front room, handsomely lighted by two large show-windows, is used as a sales-room, and is handsomely furnished with fine glass cases, &c. Back of this, at one side, is a room where the manufactured slides are kept, and where a table is placed for the use of customers when selecting them. Back of this is a large and convenient double sky and side-light, where groups, pictures of flowers, birds, &c., are made; and, at the side again, separated by a stairway, are a stock-room for the storage of supplies, packing, &c., and the dark-room, all conveniently arranged. Behind all these is the winter printing-room—*i.e.*, a room where the windows are enclosed, to protect the printers from storm and cold.

The third floor is devoted to printing—the same as the first and second—and to a general workroom: where the paper is cut, prints dried, cut out, mounted, rolled, titles printed, and spots touched out.

Before handing the negatives to the printer, a base line is marked along the lower part, to guide the printer and mounter. The albumen paper is laid, face down, and, with a measure of proper size, is marked on the back into fifteen parts of proper size for the printer. The paper is then taken to the silvering room and handed to two young ladies to sensitize. They have a huge pan of solution, at one side of which, next to the manipulator, is fastened a glass rod one inch in diameter. The paper is floated, and, as it is raised from the solution, is drawn over the glass rod, which takes off all superfluous solution admirably, and runs it into the pan. Strips of wood lie near by, with a clip fastened at each end. The sheet is hung in the clips, and the strip hung across parallel bars over a heated pipe to dry Scarcely a drop of solution falls after the sheet is drawn over this rod, and much silver is thus saved. After the paper is dry it is placed in the fuming-box, and, when properly fumed, is cut into pieces as before marked out, and these pieces are furnished to the printers as they want them.

The young ladies who print are seated at the windows. On a table before them are two covered boxes, one for paper and one for the fresh prints. Each printer runs from nine to twelve negatives, according to quality. They never touch a negative with the finger-nail, but use a camel's-hair blender to raise the corner of the paper when they wish to examine or remove the print. The prints are taken from the printers, when they are washed, toned, and fixed systematically and quickly in the usual way, and thrown into the washing-tanks before described. The prints are usually washed all night. When removed from the tanks they are hung on lines to dry. Instead of hanging lines across the room, to the permanent annoyance of all passing to and fro, they have a double, square, light framework, hinged at the top, spread out at the base, and there connected by canvas, making a triangle shape at the ends, and across these frames the lines are hung at proper distances apart, and on these lines are hung the prints to dry. When not in use, the frames are closed together and placed on one side out of the way. The prints, when dry, are then carefully examined, and imperfect or torn ones thrown out. They are then cut out for mounting. The prints are then mounted in the usual way with starch. After they are mounted the titles are printed on them by hand-presses; the prints are then rolled, and are ready for market.

(*To be continued.*)

AMERICAN CORRESPONDENCE.

The White Mountains in Winter—The Lantern Explosion—Rehn's New Photo-lithographic Transfer Process—Wenderoth's Photo-engraving and Direct Carbon Printing Processes—The Cleveland Exhibition.

The White Mountains in Winter.—I have just returned from a visit to our glorious White Mountains in New Hampshire, where a week of indescribable enjoyment was passed in company with Mr. Thomas Hill, a sprig of *Old* England, but now one of *New* England's most famous and talented landscape painters, and Mr. B. W. Kilburn, of Kilburn Bros., our largest stereoscopic publishing firm in Littleton, N. H. Mr. Hill is one of the *few* artists who are willing to accord to photography its proper and deserved place among the arts, and one who freely acknowledges photography to be one of his greatest helpmates. His great picture of the Yosemite Valley, which has netted him $10,000, and made a reputation for him that will ever follow him, and his last painting of the fearful mountain slide that occurred in the Crawford Notch, A.D. 1825, which is now being exhibited privately, and exciting the praise of the critics, though containing the best points of many sketches, also combine much that was suggested by the works of the camera and sun. Hill is free to acknowledge it.

Mr. Kilburn's perseverance and skill in his profession have won him the reputation of being *the White Mountain photographer.* He is full of zeal and love for his vocation, and spares no pains to secure the best possible result. Suiting himself to circumstances, he will work as well with the thermometer below zero as when it is at seventy degrees. Of course the camera was our companion during part of the time, and many good things were secured. The photographer's first sight of those great mountains overwhelms him. The eye can scarcely rest upon any point without a picture being suggested, and if the camera be not at hand, then is he "of all men the most miserable." He feels that an opportunity is lost, and often is that the case, for I never saw the White Mountains look twice alike. One day they are capped with clouds; another the valleys will be shut in by clouds, while the great peaks peer through them; and the next day the great heights will be all clear to give effect to the grand snow-storm most likely to follow. One day the sky will be ultramarine blue, and the next hazy and yellow; but nearly always there is an abundance of food for the camera, and one could find it for a lifetime—in the winter and in the summer, at spring time and in autumn. Much, very much, is there, however, that can never be mastered by the brush, the camera, or the pen. Our trio had a fine week of it, and cut out much future work. Climbing mountains on snow shoes; penetrating forests, snow covered and silent, all the waterfalls hushed; sleighing over the snow drifts, sometimes twelve feet deep; clambering down the notches and ravines; following up the deer tracks, and hauling the great fish through the holes in the ice, to say nothing of the photography, made us pleasure and enjoyment never to be forgotten. Although five degrees below zero sometimes, we never suffered. If any of those who march under the crown of Old England desire true enjoyment, let them come over and share the pleasures for awhile of being subject to New England's glorious diadem in winter. It is a delusion to think that the summer is the only time to visit such places.

The Lantern Explosion.—I promised you further details concerning the recent lantern explosion that occurred with Mr. Black, near Boston, a few weeks ago. I have had an interview with Mr. Black, who told me that the apparatus was of the best construction, and none of the usual precautions were neglected. The tubes conveying the gases were provided with stop cocks near the burners, and there is positive evidence that when the explosion took place the oxygen *had not been turned on at all.* It follows, then, that one at least of the gas bags must have been filled with an explosive mixture before being connected with the burners. If, by any mistake, one of the bags was filled partly with oxygen and partly with the street gas, this would at once explain the occurrence, and the tremendous force of the explosion.

Both the oxygen and the gas used were contained in rubber bags holding about forty gallons each. The hydrogen bags were filled with gas from one of the pipes in the church. There is no reason to believe that the oxygen was impure, for the best materials were used in making it, and great care was taken to empty the bags of any air or gas they might contain, before passing the oxygen into them.

The gas for the hydrogen bags was drawn directly from one of the burners in the gallery of the church, and this, as has been suggested, may have been the source of the explosive mixture. The sexton, it seems, usually shuts off the gas in the basement of the church, leaving one or two burners open in the upper part of the house. Thus the gas is allowed to escape from some 400 feet of pipe, which of course becomes filled with air. That a large amount of air accumulates in these pipes is shown by the fact stated by the sexton, that it is several minutes after the gas is turned on in the basement before enough issues from the burners in the upper part of the house to be lighted. The bag which exploded was thus filled with a mixture of street gas and common air in such proportions as to produce a violent explosion the moment it was turned on and lighted at the jet. The bag containing the oxygen being ruptured at the same instant, the gas it contained may have added force to the explosion.

A mixture of common air with the street gas explodes with much less force than oxygen with hydrogen or common gas, and the only objection to this explanation is that it hardly seems to account for the tremendous force of the explosion.

As it is a very common plan, in this country at least, to obtain the hydrogen supply from the gas in the building where the exhibition is held, these suggestions may be profitable.

Rehn's Photo-lithographic Transfers.—Mr. Isaac Rehn, one of the photographers in the Patent Office, has recently obtained a patent for a very useful and simple method of making photo-lithographic transfers as follows:—

Take of water, 32 ounces; gelatine or gum arabic, 4 ounces; saturated solution of bichromate of potash or ammonia or chromic acid, 8 ounces. Dissolve the gelatine or gum by gentle heat with water. In a dark room mix with the bichromate solution, and the mixture is ready for use. With this solution, while warm, coat the paper with a soft sponge dipped into the solution, spread it evenly over one side of the paper, and hang up to dry. The paper may instead be floated or immersed in the solution; in either case dilute the solution one third. When the paper is dry, expose it to the sunlight about ten minutes, that the film may be perfectly oxidized, when it is to be collected and preserved for future use.

The next step is to coat this paper a second time with the warmed gelatinous solution by floating it on the surface of the same in a darkened room, allowing it to remain on until it is thoroughly moistened; then hang it up in the dark to dry, and keep it from the light until further used.

When about to use the sheets, they are coated over with a preparation made and applied as follows:—

Take of yellow soap, 1 ounce; arrowroot, starch, or flour, half an ounce; water, 1 quart; colouring matter, a sufficient quantity to give the mass a tint which will be visible after it is applied to the paper; saturated solution of bichromate of ammonia, 2 drachms. Dissolve the soap in a pint of water by heat. The starch is boiled in the remaining pint. Then mix the solution, and evaporate the whole to the consistence of thick lithographic ink. The colouring matter (blue is preferable, because it does not stop the action of the light) may be added any time before the application of the compound to the paper.

When about to apply the coating, proceed to a darkened room, and on a slab of glass or stone add and mix thoroughly the solution of bichromate of ammonia with the mass. Apply this to a stone with a roller in the usual manner of lithographic printing. Lay the prepared paper on the stone, face down, and pass it through the press, and thus the paper is found coated with the sensitized transfer compound. Or the following may be substituted for the above:—Take of gelatine, 3 ounces; soap, 3 ounces; water, 30 ounces; bichromate solution, 12 ounces; colouring matter, *quantum suff.* Dissolve the gelatine in one half of the water by heat, and the soap in the balance of the water. Mix the two, and in a dark room add the bichromate solution and colouring matter. On this solution, kept warm, float the paper, as previously prepared, until it is moistened, and hang up to dry.

The paper, prepared by either of the above methods, is then placed under the negative, and exposed to sunlight—say five minutes with a negative of moderate strength, or fifteen minutes in diffused light. The print may be examined, during printing, in the usual way. After printing, immerse the print in tepid water. All the material from the parts not acted upon by the light, except the first or oxidized layer, will then be discharged, and a clear print from the negative will be found, which print, when sufficiently dry, is ready to transfer to the stone, zinc, or other suitable material.

The object of the oxidation of the first layer on the paper is to secure a smooth immovable basis on which to make the impression, so that the lines may have better and more clearly defined edges; and here is the main novelty of the process. The purpose of the second layer is to obtain a soluble layer susceptible of oxidation by the light, by which also is secured, through the oxidation, the insolubility of those portions on which the light has acted, and a retention thereby of the lines. In printing, no washing or spreading of the lines whatever occurs, as you will see by an example I send you herewith. Of course the process is only adapted to line work, and will, no doubt, be applied to the reproduction of the Patent Office drawings.

Wenderoth's Photo-engraving and Direct Carbon Printing Processes.—Whether or not your "Old Photographer" has by his recent remarks awakened our photographers or not, I cannot say, but I have another novelty to record. Visiting Mr. J. A. Wenderoth, one of our eminent photographers, a few days ago, I found him hard at work experimenting in the production of photo-engraved plates and direct carbon prints. I am not furnished with details yet. His plates possess a great deal of merit, and were etched on zinc. They are intended to be blocked, and printed in the printing press with type. His direct carbon prints were also very promising, but by no means perfect as yet. Mr. Wenderoth is a most industrious experimentalist, and I hope soon to give further information of his workings.

The Cleveland Exhibition.—I had several other little items to tell of, but as I have exceeded my space, I must conclude. I am glad to announce several responses from England to our invitation to exhibit at our Cleveland Exhibition. Those who intend to send anything should start their parcels very soon after 20th April, to insure their getting here in time. The Exhibition will be a grand affair, and the result you shall hear of in good time.—Very truly yours, Edward L. Wilson.

THE PHOTOGRAPHIC ATELIER IN 1870.

BY JOHN ANTHONY, M.D.*

I am tempted to make the construction of the photographic atelier (or so-called "glass room") the subject of a paper: not that I feel I have anything particularly novel to communicate, but because I believe that this commuication may elicit such practical remarks from our Society as may lead us to make improvements upon our present appliances, and to prevent us from subsiding into grooves, and so meriting and obtaining mediocrity, and nothing more. I will not say that I am the best fitted for laying down the law for the construction of "glass houses"—very far from it—but I may state, in anticipation of criticism, that I have had, during a number of years, the most unbounded facilities for seeing every kind of building erected for general and special photographic work: from the palatial establishments in the capitals of England and France down to the humblest shed, which the amateur of the photographic art very appropriately calls his "Den;" and I was very soon forced to recognize that it was not the vastness of the interior of the building, neither the height nor the width, nor the multitude of curtains and blinds, which afforded the best conditions for good work; indeed, I may almost say that I found the best and the most artistic photography done in the most unlikely places—unlikely according to our ideas of a few years ago, when our aspirations were always for a "glass house." Yes, really and truly a "glass house," with glass everywhere, and comfort nowhere; from the sitter oppressed by the glare, to the operator overcome by the heat—for it was thought a *sine qua non* to have as much light as possible; everybody could see that: but then a mighty contest arose as to whether the light should be let in from around or above, or from the side, or only from the front; and people took sides, and, as is usual, by no means wished to be converted to any faith but the one they held to; and, if I may judge from photographic serials, the matter is not considered by any means settled.

I may say here that some few years ago I was tempted to purchase a large photographic glass house of the usual ridge-roof construction; mainly, perhaps, from the common but delusive reason, because it was cheap. It certainly was roomy, well built, and furnished with a most admirable system of spring blinds, and I can safely affirm that this said glass house has been a plague of my life—a mistake from beginning to end. Of course you will say, "Why?" Why, because all the summer long, do what I would, the heat inside was unbearable; it warped everything in the way of furniture that was put into it, and flushed the faces of the sitters to a most alarming extent. Then the glare of light was a nuisance: spite of curtains, a beam of sunlight *would* get in somewhere, and of course be all-potent to modify the carefully arranged reflected lights and shadows on the sitter. I was extravagant in appliances to get rid of this unpleasant state of things, but I had so little success that I found myself deliberately abstaining from photographic experiments on sunny days, because I could not face a degree of heat which no amount of ventilation seemed to modify. Well, then, the conclusion I have arrived at is this: that whether for side-light or for front light, a skeleton frame-work filled with glass for an operating room is a *mistake*, and, such being my conviction, I will proceed to develop my ideas as to what an atelier should be to carry out the usual programme of work in photographic interior; and here, premising that the object of the photographic artist is to render the objects in his picture as round and as real-looking as he can, and with all the play of light and shade which makes a composition of even the most ordinary subjects so charming to the artistic eye—premising this, I venture to express the opinion that no arrangement of what is called "front light" could ever enable these effects to be got even approximatively; that it is opposed to every principle of lighting for ordinary work, and only admissible for the reproduction of prints or pictures—or, in other words, for the copying flat surfaces; for the tendency of front light has always been, so far as my experience goes, to make objects look much flatter than they would do out in the open air; whereas I take it to be distinctly the object of the photographer to make his figure or group as round as possible, in order to make up for the flattening effect inseparable from the *one eye* of the camera, as contrasted with the slightly stereoscopic effect given by the simultaneous vision of the *two* human eyes.

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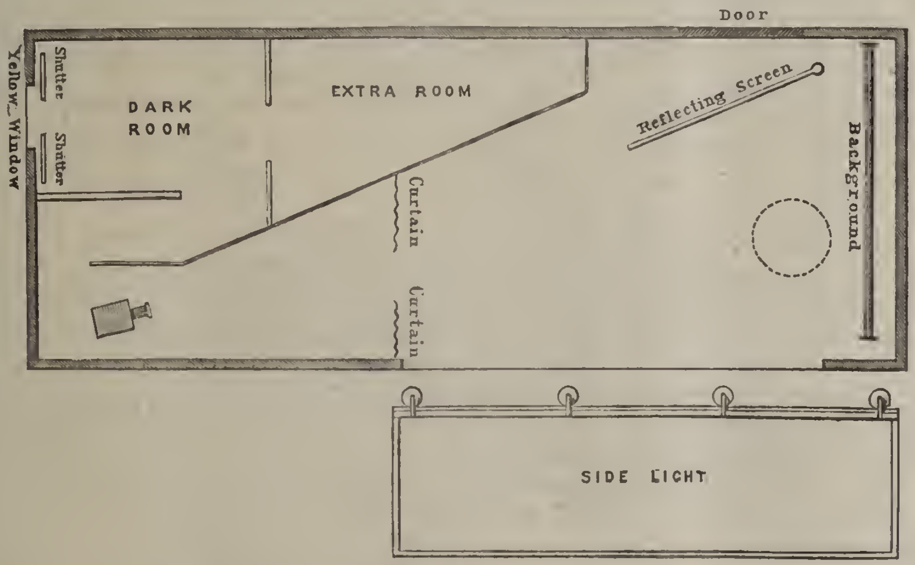
* Read before the Photographic Society of London.

I would, then, give all my adherence to a side light, and I would have that light strictly a north one; the light might be subdued, and the exposure might seem to require to be longer, but I fully believe that experience would show the resulting picture to be better, as there would be far more command of the reflected lights. The very best pictures I have ever seen have been so produced, and the principles I am advocating will, I am sure, not lose any of their force, when I tell you that they embody the actual practice of M. Reutlinger, of Paris, who makes no sort of secret of the general arrangement of light in his operating room. Light—that is, sun-light—and actinism, or the quality by which we have the image impressed, are by no means convertible terms. I have lived long enough, and photographed often enough in sunny Syria and Egypt, to know that the glare, the dazzling brightness of the sun's rays, is a *positive hindrance to the production of good pictures*, and we are beginning to recognise that in our English climate, uncertain as it is, we have, with an apparent poverty of light, a real richness of actinic rays, and particularly so when the light is reflected to us from a fleecy cloud-surface.



Bearing these points in mind, I may say that if I had to build a photographic atelier, I should adopt the exceedingly simple plan of a *solid* ridge-roof building, which only allowed a mass of light to enter from one particular aspect; I would adopt the proportions of ten to thirteen feet broad, and twenty-four to twenty-eight feet long; as I said, the walls and roof for the most part *solid*, the roof, ridge form, placed strictly east and west. I attach importance to the condition that the slope of the roof, or "pitch," as it is called, should be such that the sun, when at its greatest declination in summer, should just throw his beams *over* the glass portion, not into it. This pitch is easily found by a slight calculation. I would make the western half of the roof which sloped towards the north of a good quality of glass, and presuming that about seven feet would be the height of the wall-plate, I would have nearly, if not quite, half the length of the side of this building, towards the north, of glass, set in a frame of four feet perpendicular height, in such a manner that the frame running on wheels on a rod attached to the wall-plate, or on the solid portion of the side below it, I should be able on fine still days to slide this glass frame altogether out of the way, and so allow my main side light to be the pure and unfiltered daylight; for—alas that it should be so!—but the very best glass cuts off a large amount of actinism, and really undergoes such a change for the worse in this respect, from the influence of dirt and quasi-oxidation of the surface, as to strain out the most valuable quality of the light transmitted, often to fully one half. I would place the sitter as near as might be to this principal side light, modifying that above by curtains or blinds. I have seen, in some grand ateliers I could name, sitters placed fifteen or twenty feet away from the glass, or the opening which admits the daylight, and although clever men have produced excellent pictures under such circumstances, I have regarded them rather as *tours de force*. A bright picture could hardly be hoped for under such conditions, for it must never be forgotten that as we retire from our window, be that window great or small, we diminish the amount of our light in the proportion of the square of the distance; that is, in other words, a sitter placed eight feet away from a window of a given size, instead of four feet, would have his light diminished in the proportion not of four to eight, as might be expected, but as sixteen is to sixty-four—a tremendous diminution! Nothing can be done without a good mass of main light; but that once obtained, the reflected light upon the other side of the sitter becomes also a matter of importance, and on the proper management of the reflecting screen will depend much of the quality of the resulting picture, that is, supposing the chemical agents be in good order.

In the arrangement of the ground-plan of this proposed atelier, by making a diagonal partition after the manner I have put down on my plan, it will be seen that, having a narrow space at the dark end, where the camera would naturally be placed, and a broad well-lighted space where the sitter would be located, there would be ample space left for two rooms—a "dark room" at the east end, which might have a yellow or orange window towards the east, and another small room adjoining, which might have a borrowed light, and be used to sensitize paper in, or as a small store-room. I have found it of great advantage to have a full-sized frame of the most non-actinic glass I could get, so hinged in my dark room, that when daylight would not be injurious, I could by the touch of a lever admit that and fresh air at the same time—this fresh air being, I am afraid, too little appreciated by those who practise the photographic art, especially where the use of cyanide is persisted in. But inasmuch as this large sheet of yellow glass might be too much for delicate operations, I have a couple of lateral shutters, which, sliding easily on little wheels on a horizontal rod, can be made to approximate so as to admit a minimum of yellow light. I much prefer these to curtains, as not harbouring dust; in fact, I have found their use everything I could wish. I need scarcely say anything about the arrangement of detail; my object is to advocate certain broad principles, and to elicit the practical suggestions of the meeting. I may just mention, in conclusion, that I like a couple of green stuff or baize curtains running on a rod placed across the atelier at one-third its length, these drawn together, so as just to give the angle to take in the sitter, or the group. Of course this makes the already shaded end of the room almost in a state of darkness, a decided advantage in many respects, and doing away for the necessity for tunnels and other contrivances for keeping stray light out of the camera; while the eye of the sitter, directed towards one or other of the curtains, is rendered in a much more satisfactory manner than if it were turned towards some light object. Let me say that I attach more importance to that sliding side-light than to any other appliance I have named, and I do not think that time would be wasted in keeping it scrupulously clean; I should even polish it at intervals with rouge powder and methylated spirit, for on the state of the surface and the polish will very much depend both the quantity and the quality of the light transmitted.

As I said in the beginning, there may be nothing very novel in my views; but as I feel that the taking stock now and then of our appliances may not be without its value, and as I am convinced, from observation, that the best continental photographers have the working parts of their portrait ateliers constructed very much on the principles I advocate; and having a conviction that the general roundness and reality, as well as the softness and character, of a portrait picture, depend on the manner in which a sitter is lighted, I venture to think that a discussion at the present time as to the best mode of constructing our ateliers for portrait photography may not be other than "the right thing in the right place."

ALCOHOLIC COLLODION FOR HOT WEATHER.*

Alcoholic collodion (by which we mean a collodion containing more alcohol than ether) is, by reason of the alcohol being less volatile than ether, more suited to operations in hot weather than ordinary collodion. In working, however, with such a material, it is very necessary not to dip the coated plate into the sensitizing bath until the very last drop of the collodion has become perfectly set, or until the film at the upper margin of the plate has dried sufficiently to withstand the pressure of the operator's finger. Unless this is done it will be a matter of impossibility to obtain a perfectly clean coating of iodide of silver.

The plate should be lowered slowly and uniformly into the bath, and allowed to remain therein at least a couple of minutes before being moved about, so that the negative may subsequently be quite free from those marble appearances which are often ascribed by operators to the over-charging of the collodion with iodide salts. Even collodion rich in ether, especially in cold wintry weather, is apt to exhibit defects of this kind if proper care is not taken in its manipulation; and, indeed, one may ascribe many of the unpleasant phenomena from time to time observed upon negatives to insufficient precautions upon the part of photographers in the delicate operation of sensitizing.

That a collodion containing alcohol in excess is to be preferred to one more rich in ether has long been an established fact; for besides being possessed of greater sensitiveness, an alcoholic collodion allows of plates of the largest description being coated in hot weather without loss or risk of failure. With a little care and experience, the alcoholic compound may in fact be manipulated with as much ease and certainty of success in a high temperature as other collodions in a more temperate climate.

Correspondence.

FREE TRADE IN PHOTOGRAPHY.

Sir,—Having devoted much attention and close study to the subjects included in the useful science of political economy, I naturally felt an interest in a communication by Mr. Wilcox, which appeared in your last number of the News. I regret, however, having to join issue with the writer alluded to, and my regret is increased by his confession that his departure from sounder views is due to the teachings of one whom influential report accredits with no ordinary share of mental capacity.

With reference to matters broadly at issue between us, I can only pronounce the lessons recently imbibed by Mr. Wilcox to be the constitution of a doctrine which finds its base among the narrowest of half considered premises—a doctrine which derives support from a consideration of limited interests, which, to serve the purposes of argument, are isolated from the manifold interests with which every remaining interest is necessarily connected. As I view the matter, I cannot perceive how questions pertaining to political economy can be approached, philosophically or practically, if we turn aside from the enquiry which traces, link by link, through those ramifications that bind together all apparently dissevered interests; for though investigation can only reach at last the one great truth, that all questions of political economy deal with communities, and not with direct individual interests, yet it might truly be said that individual interests are, directly or indirectly, involved in the broad-grasped principles which the science of economy embraces. True, we might separate an interest, and plausibly work out a scheme which would confer an immediate and apparent advantage, the outraged laws of economical science notwithstanding; yet, on practical application of the scheme, would it ultimately be discovered that the ill temporarily provided against is reproduced in some form that restores the former disadvantage. I must not, however, wander into the wide range of argument that could be marshalled in support of the position I have taken, as a photographic journal could scarce afford room to contain them. Yet, ere I turn more directly into a legitimate channel with my remarks, I am irresistibly tempted to add a word or two which I fear would thrust home on the minds of those who are just now so warmly and fruitlessly squabbling over secular education and denominational catechisms; for I believe that the all-important subject of political economy is too much neglected in our schools as at present constituted. If we are sincere in our desire to improve the minds, and what I might term the social morality, of the rising generations, why not allow education to embrace, as one of its leading elements, that teaching which can impart a right estimate of constitutional privileges, and a true knowledge of those rational principles which inseparably connect capital with labour? So may our children be led to comprehend that as both by natural laws are made requisite, so both can work in perfect harmony if that bitterness of feeling which, on both sides, ignorance engenders, is once replaced by that comprehensive rationalism that unfolds the links of capital and labour, to show that two imperfections, when united, can make a perfect whole. I am of opinion that a catechism of social and political economy could be as easily learnt, and far more easily understood, than any theological catechism that has yet been compiled, and a teacher possessing a tact for teaching could make it infinitely more palatable to the young intelligences. I am, however, pushing on to dangerous ground, so shall at once turn into the photographic matter which Mr. Wilcox has introduced for discussion.

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* *Licht.*

Over-cheapness is a sore which most who follow photography as a profession are now smarting under, and I feel assured that any suggestion which promises an amelioration of present conditions must and would command the attention of all who are directly interested in the matter. I much fear, however, that the plan briefly sketched by Mr. Wilcox would, if practically executed, prove somewhat similar to patented and be-puffed pills and potions, viz., more promising than effective. I will readily admit that an association, such as suggested by Mr. Wilcox, would do much in raising the social status of photographers, and without doubt the art would be benefited by the extra exertions which ambition would put forth to qualify. But here the advantages end, for no association could impose a tariff of charges which would stay the inevitable rule of political economy. The skill of men varies in quality; this would introduce into the association a maximum and minimum of talent that would lead from the lowest to the highest by gradation so tender that any attempt at classification would prove a failure, and as this requisite element could form no part of the association, no classified tariff of charges could be imposed on its members, therefore each member of the association would be at liberty to fix any price on his productions that did not fall below the minimum arranged upon. But now comes the question suggested by considerations of that almost certain success which follows in the wake of skill. If it so happen that maximum and minimum skill abide in one locality, how about the adjustment of charges?

Take, as an example, the case of two photographers who may chance to reside in the same town—not improbably in the same street—both members of the association. A. has reached the maximum of skill in his profession; B. is only a little beyond the extreme minimum; yet, as both are intent on drawing patronage to themselves, both feel disposed to keep their prices at the association's prescribed tariff. What is the result reasonably to be expected? Why, A. gains the living business, whilst B. goes to the wall, or, what would be more likely, he would restore the balance by increasing cheapness, and thus would he exemplify the correctness of that law of levelling which Mr. Wilcox has been led to repudiate. It might be contended, in opposition to the example here offered, that in all probability the man of maximum skill would adopt a high tariff of charges. In certain cases such things might prove so, but much would depend on circumstances. There being no force to compel him to class his skill and prices in one scale, the weight of probability is in favour of his adopting a course which promises the greatest pecuniary advantage to himself. Proof: one of the most skilful and most commercially successful photographers now living once remarked to me that his experience went to prove that a lively shilling is in the end more profitable than the sluggard crown. The remark is a correct one in many instances, and doubtless the minimum associates would soon discover its correctness to their cost.

As a summing up and conclusion, I cannot see any clearer way out of the difficulty of over-cheapness than to allow matters to take their natural course. A demand for cheapness will always find a supply, but cheapness will always prove the best weeder-out of the vulgar and the nasty which have so long disgraced photography.

And now it only remains for me to add, that should the question opened up by Mr. Wilcox prove of interest to your readers, I shall have much pleasure in breaking a friendly lance to support the views briefly offered in the present epistle.—Yours truly, W. T. Bovey.

Willesden, April 17th, 1870.

DR. LIESEGANG'S DESCRIPTION OF A PROCESS AFTER SALOMON.

Sir,—I do not know whether it is that I am particularly obtuse, or that your correspondent of the 18th March, Dr. Liesegang, epitomises too briefly, or that he pre-supposes certain *modi operandi* which he does not explain; but, at any rate, I have altogether failed to carry out his instructions in the following sentence of his communication on the Adam-Salomon pictures. He says:—

"Take a very deep impression upon albuminized paper; the lights must appear bluish, and the shadows must be metallic. The print is covered with a plate of ground glass, on which the face and hands are stopped out in black colour; then it is exposed to the light till all the high lights have a grey tone over them; then the margins of the print are toned down in the light, so that the figure is surrounded by a light halo."

As far as the operation on the ground glass, all is sufficiently intelligible; but when "the prints are to be exposed until all the high lights have a grey tone over them," I thought the high lights had been previously printed "until they appear bluish." How is any grey tint to be got out of them then? Then "the margins of the print are toned down in the light, so that the figure is surrounded by a light halo." Well, but then the background has been previously printed until it became "metallic," and consequently black. How is a halo to be managed then? Will you, with your usual good nature, kindly explain this explanation a little more explicitly, and oblige, yours truly, Lux.

[If our correspondent reads again carefully, we think he will see that he himself has created the difficulties which have perplexed him. There is nothing in Dr. Liesegang's remarks about the background being metallic or black. The *shadows* are to be metallic; but by this term is clearly meant the deep shadows of drapery, &c., and not the background, which is usually of a middle tint, and is clearly intended so here, inasmuch as sunning down at the margins will give the effect of a light halo round the image. Again, since the flesh is to be protected by a mask of black painted on the glass, it is clear that the lights referred to are those on linen, &c., which, without some treatment, are often chalky and crude; and the term *grey* is evidently used to indicate a deeper tone than the *bluish* tint they had at first acquired. The general aim is clearly to keep the flesh as pure and brilliant looking as possible by subordinating other parts of the picture.—Ed.]

COMPETITION AND LOW PRICES.

Sir,—In this town resides another photographer. We two have between us taken the whole carte business of the neighbourhood. Our terms have been about equal, viz., 12s. per dozen. The other day my rival—I suppose finding I was getting the largest share of public support—suddenly advertised his cartes at 7s. 6d. per dozen: a tolerable jump.

I should feel obliged if you would kindly give me the benefit of your advice. Do you think I ought to reduce my terms, which I have worked for seven years in competition with the same man, or keep on steadily, in the hope, in these days when people prefer cheapness to all else, that my business will not be affected?

People are now-a-days so fond of cheapness, that I fear I shall have to adopt what one of your correspondents this week terms "the cut-throat system," and reduce to 7s. 6d. If so, my rival will have gained nothing; in fact, we shall both lose considerably, as, terms being equal, I may fairly expect my usual amount of business.

I wish photographers would band themselves more together to keep up prices, which in many places are so bad that principals have had to become, first, their own operator, then the assistant operator of a more fortunate photographer.—I am, sir, yours obediently, L. H.

[The case which our correspondent describes undoubtedly involves a difficulty, the solution of which can only be supplied by himself. The first question to be decided is: Are the photographs of our correspondent really superior to those of his competitor? If they are, then by all means let him maintain his present prices. All our opportunities of observing convince us that real excellence will command its own price. The photographic portraitist in London who is, perhaps, most fully and constantly employed, charges, we believe, higher rates than any one in England. As a rule, the price charged is the artist's own estimate of the value of his work; and where a low price is charged, the public naturally believe that the artist believes that his work is not worth a higher price. If, therefore, the excellence of our correspondent's work in any degree justify him, we commend him to maintain his prices. If, on the other hand, his work is not better than that of his compeer, or he cannot induce the public to believe so, he may have eventually to submit to the loss which the folly of another has imposed on both; for as the amount of portraiture required will not, in all probability, be increased in any appreciable degree, the issue will be a loss to the photographers of upwards of a third of their income, or, probably, of about half their nett profits—a most serious loss to the photographer—whilst the gain to the public is inconsiderable in comparison.—ED.]

Proceedings of Societies.

THE PHOTOGRAPHIC SOCIETY OF LONDON.

AT the meeting of this Society, held in the Architectural Gallery on the evening of Tuesday, the 12th inst., after some preliminary business, the paper of Dr. Anthony on the photographic atelier was read by the secretary, and illustrated by a diagram on the blackboard (see p. 186).

The CHAIRMAN, in inviting discussion, confirmed the view of Dr. Anthony as to the importance of pure air in successful photographic operations, and mentioned that at the Royal Observatory, where a number of lights were kept burning in the photographic registrations, they found it necessary to look carefully to the supply of pure air, in order to secure satisfactory photographic results.

Mr. HART thought that the proposed design would admit of improvement. He objected to the necessity for placing the camera in one corner of the room, and thought if the interior were kept clear of small rooms, leaving space for the camera to move round the sitter, a great advantage would be gained. He would have glass at both sides, about ten feet high, which would render very little top light necessary. Instead of Dr. Anthony's sliding window, he would have the windows to open in the fashion of French casements, which would often aid the production of some pretty effects.

Mr. G. HOOPER said there could be no doubt that photographers would always choose a north light where it was attainable. He had worked in something like a dozen different studios, and in all cases found a high north side light the best; the top light should be limited, and he liked it best coming through ground glass. He should certainly prefer the square of the room kept intact, and no small rooms cutting portions of the room off. He would prefer a room 30 feet long, and from 10 feet to 12 feet wide. The room in which he now worked was built by Mr. H. P. Robinson, and gave admirable results at either end of the room. It had one side light, north, about 10 feet high. It was an excellent plan in hot weather frequently to wet the roof, and so keep the room cool.

Mr. A. L. HENDERSON found it convenient to work with a room having both north and south windows; the latter being glazed with corrugated glass, enabled him to work with the sun full on the sitter without disadvantage. By means of deep blinds, made on the Venetian blind principle, he could admit the light so to fall direct on the sitter, whilst the camera was shielded from it.

Mr. HOOPER said that a light on each side was not good for taking portraits to be hung as pairs, as the quality of the negatives would certainly differ, unless the chemicals were changed; that taken with the south light being soft and flat, whilst that with the north light would be bold and brilliant. It was better to work at both ends of the room with the same light and chemicals.

Mr. SEBASTIAN DAVIS described his experiences as an amateur portraitist, which were in favour of north light, as giving better pictures with shorter exposure, in apparently duller light.

The CHAIRMAN, in moving a vote of thanks to Dr. Anthony for his excellent and interesting paper, said, whilst the general characteristics of the proposed studio seemed to be excellent, he agreed with those who thought that it would be better, where it was possible, to keep the inside of the room clear, instead of taking up part of the interior space with dark rooms, &c.

The subject then dropped.

SOUTH LONDON PHOTOGRAPHIC SOCIETY.

THE usual monthly meeting of this Society was held in the City of London College on the evening of Thursday, April 14th the Rev. F. F. STATHAM, M.A., in the chair.

The minutes of a previous meeting having been read and confirmed,

Mr. TAYLOR exhibited some fine examples of carbon printing by Mr. Firling, of Dorchester, and explained that the sensitive tissue might be kept for some time, either before or after exposure, without risk of change.

The subject for the evening was the adjourned discussion on Mr. Johnson's paper on carbon printing, but as Mr. Johnson was unable, through indisposition, to attend, the discussion assumed a somewhat desultory and conversational character. Referring to Mr. Johnson's remark at the previous meeting, to the effect that the action of light continued some time after the prints had been placed again in the dark,

Mr. HENDERSON asked if any one had noticed that a similar result seemed to occur in the wet process, and that a plate which was kept for some time after exposure developed more rapidly and gave more detail than a plate exposed for the same time and developed immediately. He had especially noted this in producing four transparencies in succession on one plate from one negative; the first exposed always requiring a shorter time than the last.

Mr. BLANCHARD had noticed a similar fact, and he believed it was very familiar to those who had been in the habit of producing "diamond cameos."

Mr. WHARTON SIMPSON had often heard the fact noticed. Mr. Burgess, of Norwich, had mentioned that in taking a succession of transparencies on one plate for his eburneum pictures, the last exposed always required most time. The question might fairly arise, however, as to whether the result was due to the film becoming slightly less sensitive on being kept before exposure, and so causing the last exposed to require a little more time, or whether, as Mr. Henderson supposed, the action of light continued, and so permitted a shorter exposure to those some time after exposure.

Mr. HENDERSON said that he had no doubt, from his own experiments, that the latter was true, as he had tested it.

A conversation followed, in which

Mr. BLANCHARD expressed a conviction that it was the progress of a reducing action from diffused light, or other cause, which would, when the plate was kept long enough, probably issue in fog.

Mr. SIMPSON remarked that the lens was a window admitting other light besides that forming the image, and as the portions of the plate not really under exposure were uncovered in the camera, the stray light passing through the lens might set up this reducing action.

Mr. TAYLOR suggested that possibly a more perfectly light-tight camera might produce a different result.

A desultory conversation on the theory of the vibratory formation of the latent image, as affording a possible explanation, followed, in which the Chairman, Mr. Taylor, Mr. Hart, Mr. Henderson, Mr. Blanchard, Mr. Simpson, and some others took part.

The CHAIRMAN then expressed a high opinion of the carbon prints exhibited, and stated his conviction that for many purposes it possessed special advantages.

Mr. CROUGHTON said that until he had seen the manipulations by Mr. Johnson at a previous meeting, he had an impression that the carbon process was more difficult than silver printing; but he was struck with the fact that carbon was really the simpler and easier of the two. As an artist, he was surprised that photographers, especially for coloured work, where a great deal of money was often expended in artistic skill, had not adopted carbon in place of silver prints of doubtful permanency. The only drawback he knew was that, in some cases, he found the colour apt to crack off the shadows of carbon prints; but he had not tried any preparation of the surface, by which such a defect, he did not doubt, might be prevented.

An incidental conversation on retouching negatives followed, after which

Mr. **Hart** expressed a conviction that the permanency of carbon prints had not been satisfactorily proved. As yet, we knew very little indeed of the effect of time and exposure on gelatine films impregnated with chromic acid. Chromic acid was a most powerful oxidizer, and as it would be as difficult to remove all traces of it from the carbon print as it was to remove hypo from prints, it would probably issue in the eventual destruction of the prints.

Mr. **Simpson** said that it would be somewhat difficult to leave chromic acid in the print, inasmuch as the very principle of producing the print involved getting rid of it. The action of light on the soluble salt of chromic acid was to convert it into insoluble sesquioxide of chromium. The principle of developing a carbon print consisted in washing away soluble matter, and leaving insoluble matter. So long as chromic acid was present, there was solubility of the gelatine and pigment with which it was in contact, and the process of development washed it away. The picture consisted of the insoluble portion left, and there would be no insoluble portion if chromic acid were present in it.

Mr. **Hart** did not think it would be so easily washed away. Leather, of which carbon prints were said practically to consist, was very perishable.

The **Chairman** thought the deduction scarcely a fair one.

Mr. **Simpson** pointed out that leather not unfrequently lasted for hundreds of years in bindings of books, and that vellum and parchment, practically insoluble gelatine, were the most durable substances which could be selected for valuable documents.

Mr. **Foxlee** asked if parchment did not consist of some fibrous matter as well as gelatine.

Mr. **Simpson** said that on boiling parchment every particle would be reduced to a state of jelly.

Mr. **Taylor** asked if any one had ever seen such a thing as a faded carbon print.

Mr. **Blanchard** said that with the exception of a few imperfectly mounted or imperfectly transferred prints on Swan's early collodion tissue, he believed such a thing as a changed carbon print was not on record. He must confess that, with all the care he could use, he could not say the same of all his silver prints produced during the same period.

Mr. **Hart** thought that it must not be forgotten that the number of carbon prints produced bore no proportion as yet to those in silver, and that comparison was scarcely fair in this respect.

After more desultory conversation, the subject dropped.

The **Chairman** then reminded members that the May meeting would be devoted to the exhibition of specimens, and invited members, their friends, and photographers generally, to attend, and bring with them examples of interest for the inspection of the members.

The proceedings then terminated.

Talk in the Studio.

Photographic Illustrations in Botany.—The botanic applications of photography seem to be increasing in the United States. We have recently received some further charming examples of leaf prints from Mr. Gaffield, of Boston, to which we shall refer again shortly, and we find in different American journals allusions to this application of the art in rendering the venation and nature of the surface of various kinds of foliage.

Explosion of Fulminating Gold.—A curious explosion is stated recently to have occurred at a jeweller's establishment in Syracuse. A quantity of gold scrap had been dissolved in nitric acid and precipitated by ammonia. The entire material being then placed over a register to evaporate, was left there, in an earthern jar, until dried. It was then removed, and when cool, the operator, who had evidently not studied the chemistry of gold, proceeded to scrape out the dry precipitate into a sheet of paper. A serious detonation soon occurred, and pieces of the jar were driven through a thick plate-glass screen, making clear holes, without cracks, so high was their velocity. We are not told of what became of the operator. Excess of ammonia used in precipitating gold will produce fulminating gold in its most explosive condition.

Chemical Intensity of Light at Different Altitudes.—Dr. H. E. Roscoe and Dr. T. E. Thorpe, in a recent communication to the Royal Society, give the results of a series of determinations of the chemical intensity of total daylight, made in the autumn of 1867, about eight and a-half miles S. E. of Lisbon, under a cloudless sky, with the object of ascertaining the relation existing between the solar altitude and the chemical intensity of the light. It had been already proved, by experiments made at Kew, that the mean chemical intensity of total daylight, for the hours equidistant from noon, is constant. The results of the present series of experiments prove that this conclusion holds good generally. One of the chief results arrived at is that, although the chemical intensity for the same altitude, at different places and at different times of the year, varies according to the varying transparency of the atmosphere, yet the relation, at the same place, between altitude and intensity, is always represented by a straight line.

A Quaint Studio in America.—A correspondent of the *Washington* (U.S.) *Chronicle*, describing the city of Newburyport, Mass., has the following description of the studio of a gentleman with whose name our readers are familiar:—"A quaint old building, on State Street, in the heart of this New England city, contains a curious little bit of Germany. Rooms with pictures, flowers, birds, butterflies, a wonderful microscope, with I dare not say how great power, and a piano strewn with the music of Beethoven, Mozart, Weber, and Cherubini, are interesting in themselves, but especially so to visitors, because here Carl Meinerth, with his transfiguring mezzo-tinto photographs, will make them handsome if beauty is within their remotest possibility, giving people pictures of themselves at their best, with the face which they privately hoped, but never dared believe, they possessed."

Curious Blinds.—*Nature* mentions a new contrivance for preventing people looking into a room, while light is not excluded. It consists of a number of glass rods arranged either vertically or horizontly, and secured together by appropriate frames, forming a series of cylindrical lenses which break up the light and throw it into every part of the room, thus producing a soft and diffused glow which is very beautiful and pleasant. The glass rods may be of any colour, and by an arrangement of the colours very beautiful effects can be produced. The contrivance is the invention of Mr. Demuth.

Photography in Entomology.—The application of photography as a means of rendering with accuracy the structure of insect wings, the *American Naturalist* thinks, "will prove of great benefit, especially in the venation of the wings of the Hymenoptera, Lepidoptera, and Diptera. We value very highly certain photographs taken for us several years ago by Professor A. E. Verrill; and Mr. Carl Meinerth, of Newburyport, Mass., has taken some exceedingly good pictures of Hymenoptera and Moths. The venation of insects is exceedingly difficult to represent by the pencil, even of a facile and skilled entomologist.'

Gutta-percha Vessels for Chemical Uses.—Erroneous views have been held and circulated concerning the durability of gutta-percha under the action of various reagents. We are ordinarily told that it is absolutely unacted upon by cold mineral acids, with the single exception of the sulphuric at 1·6 sp. gr., and upwards. This is far from being the case. There is, indeed, no immediate corrosion, or other rapid and striking change; but, in course of time, the surface becomes overspread with a thin, buff-coloured layer, which may be easily rubbed off. This change extends gradually deeper and deeper, till the whole mass loses its coherence and splits in various directions. I have before me a number of jugs which have been used for nitric, chlorhydric, and dilute sulphuric acids, as also for solutions of stannous, stannic, and ferric salts, and which, in less than three years' service, have become quite worthless; on being sent for repairs to a dealer in such articles, they were returned with the remark that they "could not be mended, as they had been used for acids." I find that the disintegration in question can be very much retarded if the vessels are always rinsed in cold water immediately after being used.—*J. W. Slater, in Chemical News.*

Conditions of Micro-Photography.—"Photography, from its extreme accuracy and delicate rendering of details, claims a very high place among the resources of microscopical art. When the object is suitable for its employment, the result is not to be equalled by any other means of delineation. The conditions, however, which it is requisite to comply with in order to obtain a successful micro-photograph somewhat limit the cases in which it is available. The object to be photographed should be very thin and flat, so that the whole, or the greater part of it, lies in the same plane, that it may all be in focus at once, the reduction of aperture commonly used by landscape photographers to secure focal depth not being practicable, on account of the great loss of light occasioned by the use of small diaphragms, which is so great when the object is much magnified as to render the production of an impression on the prepared plate impossible with any reasonable amount of exposure. This is a very great drawback, as many of the most interesting microscopical objects can scarcely be seen without continual alteration of the focal adjustments. The colour of the object should also be such as is favourable for photographic purposes; the yellow, brown, and red tints of many tissues render it impossible to obtain any satisfactory result. The best photographs are always those obtained from colourless objects, such as the *Diatomaceæ*, the delicate sculpture on the frustules of which are marvellously rendered, as may be seen by examining the photographs by Dr. Maddox, to be procured of Mr. How, of Foster Lane, at a merely nominal price. So minutely are the details produced that they will, when photographed upon glass, bear a considerable amount of enlargement by means of the magic-lantern. At present only objects illuminated by transmitted light have yielded impressions on the prepared plate; the more feeble images obtained from reflected light and dark field illumination have failed in producing photographs, and so a large and interesting class of objects is excluded. Possibly, future improvements may remove this and some other difficulties which at present limit the use of this valuable art."—*Chemical News.*

To Correspondents.

Enquirer.—Drying sensitive albuminized paper by gas is not desirable, as the sulphurous productions of combustion in many samples of gas may act on the silver. Gas might be used to raise the temperature of a room in which the manufacture of albuminized paper is conducted without danger.

E. H. T.—Your error is doubtless in adding too much of the permanganate solution. We will first answer your second question, as that will better enable you to understand the answer to the first. Permanganate of potash is a test for the presence of organic matter in water, and it also purifies water containing organic matter. When permanganate of potash is added to absolutely pure water, it causes a pink tinge, which remains; if, however, any trace of organic matter is present, the permanganate is decomposed, and the organic matter oxidized by the liberated oxygen; the carbon in the organic matter is converted into carbonic acid; the hydrogen is converted into water, the nitrogen into nitric acid, which combines with the potash present in the permanganate, and a trace of brown oxide of manganese is precipitated. The evidence that these reactions have gone on properly is found in the fact that the pink tinge disappears. If, on adding more permanganate, the pink tinge remains, it is evidence that all organic impurity is removed. The same thing takes place, with some modifications, when permanganate is added to your printing bath. If you add just sufficient, the brown turbidity caused by the oxide of manganese liberated will soon disappear, or may, if the bath has required much purifying, be removed at once by filtration. If excess of permanganate be added, it will be decomposed by the silver, permanganate of silver and binoxide of manganese being precipitated. Be careful to add a little at a time, and if the turbidity does not subside quickly enough for convenience, filter.

Adolescens.—The general proportions and plan you propose will answer, but you will find twelve feet an insufficient length for card portraits. With the shortest focus you can use for cards you will require twelve or thirteen feet between the sitter and the camera. Have the panes of glass as large as you conveniently can. A warm grey is a good colour for the interior, and also for backgrounds.

Capt. Turton.—We have had good reports, but have not had extensive personal experience. We have not tried the other material you mention. The manufacturer you name is a very respectable one; but we have no specific knowledge of his lenses.

A Hard Trier.—The "Lucella" lamp for using an explosive mixture for photography was patented by Mr. Scaife. The proportions of magnesium powder and chlorate of potash are not stated in the specification, and we have no practical experience in the matter. The lenses you name are by the same maker, and he will be able to inform you as to the relative rapidity. Probably Mr. Solomon can supply the magnesium in powder. We do not know the price. There is no danger in mixing it with the chlorate of potash. We do not know of any cheaper card-cutting machine than that in the catalogue. If the prints are enamelled before mounting, you escape the difficulty.

Fine Weather.—We have had no practical experience with No. 1, and, from report, believe that the examples vary. You will ascertain best by trying. No. 2 we know to be good.

Venator.—By all means maintain your prices, if possible; make your work as much better as you like; but do not, unless compelled, reduce your prices. You may regard the statement that excellent card portraits are supplied in London for one shilling and eightpence per dozen as altogether untrue. Your background is a shade too dark for cards, and there is a slight tendency in the flesh generally to be too dark in your pictures. On the whole, No. 3 is best.

J. Girault (Cannes).—We did not examine the portrait cemented to a block of glass to serve as a paper weight very carefully, as it was only in our hands at the meeting in question for a moment; and we cannot say anything very definite about the details of production. It seemed to us as if the thick piece of glass was flashed with a surface of opal glass, the portrait produced on this opal surface, then a thin plate of glass cemented over the picture, the edges being finally bevelled by grinding and polishing. Possibly a picture produced by Mr. Burgess's eburneum process, cemented between two pieces of glass, might serve; or a collodio-chloride print produced on a plate of glass, then coated with a solution of gelatine and oxide of zinc, and, finally, mounted on the block of glass. As we have had no experience in this direction, and have heard but little of these examples, we can only suggest. The best substance for cementing the glasses together is Canada balsam. We described the operation some time ago; you will find details on page 83 of our Year-Book for 1866. 2. The second-hand lenses of the best English makers may generally be relied on. It is their rule never to send anything out of their establishments which they do not guarantee. They generally reach the dealer's hand through ordinary business changes. We think you may safely purchase from Mr. Morley, and place full confidence in the genuineness of the lenses of the makers named.

W. W.—A lithographic press will not supply the place of a rolling press very perfectly, but it will of course improve the surface of the prints in some degree. 2. Either of the two lenses of the maker you name will answer the purpose for cabinets, but for rapidity we should prefer the 3 B; but either will yield good results.

W. Perry.—Thanks: received.

Russell Sedgfield.—The gelatine we employed was Nelson's. It is probable that the cause you assign, the quality of the gelatine, may account for the failure. Possibly a commoner quality of glue or gelatine, absorbing less water, may answer better. We accurately described our own experiment, and, so far as we can estimate, three-fourths of the final result consisted of alcohol.

An Amateur.—The negative you send has the appearance of being thoroughly out of focus, or else the product of a very defective lens Did the lens give a sharp image on the ground glass? If it did, and you are certain that the sensitive plate and the ground glass are in the same plane exactly, then the cause, probably, may be found in want of coincidence between the chemical and visual foci. This may be remedied by modifying the focussing each time, but is a very troublesome defect. The picture is also somewhat over-exposed, and the bath appears to have been turbid.

H. L. S.—From our own experience we should judge that one ounce of hypo in sixteen of water would give a fixing bath too weak for safety. But if trying it in accordance with a proposed formula, we should take care to use it fresh, and give the prints about half an hour's immersion.

Wm. Blair.—In our next.

Wm. Firling.—Thanks. We shall notice the prints in our next.

Wm. Notman.—Thanks. The group is a very extraordinary one, and very beautiful. We shall be glad to receive some details of the mode of production.

Lieut. Waterhouse.—The report is duly to hand. It is very interesting, and we shall quote freely from its pages. We can readily conceive the difficulties of working all gelatine processes in India. We publish all the details of Albert's and other photo-callographic processes which are obtainable. Thanks for the promise of details of your studio and copying arrangements.

A. Brothers.—Received. Thanks. In our next.

Carl Meinerth.—Your charming specimens, magazine, and newspaper duly received. We shall have pleasure in receiving the promised communication. We shall write soon.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 608.—*April* 29, 1870.

CONTENTS.

PAGE
Water-Marking Paper by Photography ... 193
The Patent Right in Carbon Tissue ... 193
Critical Notices ... 194
On the Fixing of Silver Prints. By W. T. Bovey ... 195
Further Remarks on Carbon Tissues, etc. By Wm. Blair... 197
Photo-Mechanical Printing Processes on the Continent. By Lieut. J. Waterhouse, R A. ... 198
Fir Cone Dry Process ... 199

PAGE
Enlargement by a Developing Process. By M. Le Marquis Maison ... 200
On Stereograms of the Planet Mars. By R. J. Mann, M.D., F.R.A.S., etc. ... 200
Correspondence.—Enamelling Mounted Prints... 202
Proceedings of Societies.—French Photographic Society ... 202
Talk in the Studio ... 203
To Correspondents... 204

WATER-MARKING PAPER BY PHOTOGRAPHY.

A CURIOUS illustration of the possibility of an interesting published fact remaining ignored for a few years, and then becoming the subject of a confluence of re-discoveries, occurred at the last meeting of the French Photographic Society. Several gentlemen had each coincidently, but without concert, been experimenting in a specific direcion, and Messrs. Davanne, Maquet, and Jeanrenaud exhibited examples of certain ornamental designs they had produced. These designs resemble in character the ordinary "water-mark" on paper, consisting of transparent or emi-transparent lines in the body of fabric. They are, in he cases in question, produced by means of mechanical pressure, the *cliche*, in this case, consisting of a gelatine elief produced by photography. As will at once be seen, he most elaborate design can, by means of photography, be produced as easily as the most simple and crude forms; and the result, when skilfully managed, is exceedingly beautiful. The operation is so simple, and the transparent designs are so elegant and effective, that it is not surprising hat several experimentalists should have given the subject attention.

But the curious part of the business is found in the number of reclamations to which the exhibition of these pecimens gives rise. M. Marion stated that he had alled the attention of the Society to some similar results he had produced in January last, and that Mr. Woodbury had visited his establishment at Courbevoie for the purpose of inspecting his method and results. M. Marion was followed by M. Gobert, who remembered that in 1867 and 1868 Mr. Bingham and Mr. Woodbury had produced omething of the same kind, and, he believed, patented he method. M. Davanne naturally felt a little disappointed that his own and his friend's results should be hus robbed of the interest of novelty, and regretted that nothing had been published in connection with such valuable improvements.

The progress of photographic discovery in what may be ermed the bye-ways of the art has been so rapid and prolific, that anyone may well be excused for remaining gnorant of many of the details which lie outside the immediate sphere of his own duties, especially if the ecord is published in a foreign tongue; but it is a pity when experimentalists in any special direction fail to be amiliar with the results already attained in their own peculiar departments. The process of producing imitation water-marks by means of gelatine reliefs was initiated by Mr. Woodbury three or four years ago. Early in 1867 he gave us some fine examples of the results, one of which, an nterior view of the Crystal Palace, is now before us. In he PHOTOGRAPHIC NEWS, May 24th, 1867, we noticed these specimens, and briefly described the method of producing them. In the May of 1868 we published the specification of a patent Mr. Woodbury had taken for the method in question, and for some varied applications of which it was capable.

The process is very simple: a gelatine relief by Mr. Woodbury's ordinary method is obtained, and a sheet of paper is placed in contact therewith and passed through a rolling-press. This produces a transparent design of perfect gradation. By reflected light the depressed portions appear of a deeper tint than the rest of the paper; if a transparent positive instead of a negative be used in the first place, a pretty, delicate, grey positive is produced. A variety of pleasing applications in producing designs for bank-notes, bill-heads, letter-paper, and other similar matters is possible, and the only wonder is that as yet such a good idea remains to be commercially utilized.

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THE PATENT RIGHT IN CARBON TISSUE.

THE actual value of any patent can only be decided in a court of equity, and the chief advantage which can be gained by a discussion of the question in the pages of a journal may be hoped to consist in such an elucidation of the facts by disinterested disputants as may render litigation unnecessary. It is with this view that we willingly devote some space in our pages to a discussion which, at first sight, seems to concern the interests of individuals rather than that of the community. With a thorough belief in the carbon process, we look with interest on all legitimate competition in connection therewith, which may give a stimulus to its progress; but we should deprecate litigation as calculated seriously to retard its general adoption amongst photographers, and hence we regard a courteously conducted and candid discussion of the patent claims as neither uninteresting nor unprofitable to the photographic community at large.

On another page Mr. Blair again, without disputing the validity of Mr. Swan's patent, enters into some points which he thinks militate against portions of it. In justifying our own convictions on the subject we shall be very brief. Mr. Blair thinks the argument derived from commercial success is based rather on its appeal to the feelings than on its legal or logical value. We have never intended it as such an appeal. The argument stands thus. The desirability of a process of carbon printing with half-tone was recognized for years, and much experiment was devoted to its attainment. For many years no process capable of being worked commercially was known. In 1864 Mr. Swan patented a process which was capable of such commercial application, and at once entered into commerce. The conclusion logically deducible is, that Mr. Swan had made specific and radical improvements, since he made that possible which was before impossible. Any attempt to argue, in the light of present knowledge, that the processes previously in existence *might* have been made practical, is fairly met by the fact that notwithstanding the recognized need of such a process, no one ever did work, or even attempt to work, the processes to any practical extent, or with any idea of their commercial application. The specific thing which led to this possibility of commercial application consisted in the preparation of a transfer tissue made with a specific view to its end, and a method of employing this tissue so that good results could be certainly obtained by practicable and easy manipulations. Until this tissue was patented by Mr. Swan, no carbon tissue had ever been made with a view to transfer; and if that made for other purposes were ever suitable for transfer, it was by chance, not by choice, or by necessity of its nature. It was not made for transfer, nor was there, so far as any evidence exists, ever a transfer made or attempted, or even conceived, in connection with it;* and, further, it appears to us, tissue made by the method described by Fargier is not only very dissimilar to that of Swan, but must be essentially unsuitable for working a transfer process.

In the formula stated in Fargier's specification, the gelatine solution contains less than eight grains to the ounce, and no sugar or similar body. In the formula in Swan's specification the gelatine solution contains a quarter of an ounce of gelatine in an ounce of water, just fifteen times as much as in Fargier's, and, in addition, one-eighth of an ounce of sugar. Now, to us, if no other evidence existed, it is evident that with Fargier's weak solution it would be an almost insuperable practical difficulty, if not an impossibility, to make a tissue with sufficient body of the gelatine on its surface to be suitable for transfer operations, whilst with Swan's tissue, prepared with a solution containing upwards of twenty times as much organic matter, the production of a thick film suitable for transferring operations was a matter of course. The use of sugar present in Swan's, absent in Fargier's, as carbon experimentalists well know, is of the utmost importance in facilitating the work. Mr. Blair suggests that where the specification of Swan prescribes proportions on the pigmented gelatine for application, it is referring to glass, not to paper. This is true; but it is not an illegitimate assumption that in preparing the paper tissue a less proportion of gelatine would not be employed, especially as in describing the preparation of paper tissue "a thick coating of the tissue compound" is definitely prescribed.

Mr. Blair thinks that no legitimate conclusion as to the thinness of the coating of pigmented gelatine in Fargier's paper can be drawn from the fact that the thinnest obtainable paper was to be employed. We think the argument inevitable; it is this: the paper being thin, would of necessity render desirable a thin coating of gelatine, because the thicker the coating of gelatine on extremely thin paper, the more unmanageable it would become in manipulations to be conducted in water. Take Fargier's tissue, with the manifest character and purpose it has as described: it is a very thin sheet of paper coated with an extremely thin solution of gelatine and pigment, which, even after two or three applications, would only be of sufficient thickness to give moderate blacks without leaving any soluble layer to facilitate transfer; with such a tissue it is possible that moderate prints could be obtained by printing *through* the paper; but surely no one would dream of preparing such a tissue for transfer purposes, nor could any hope of success be entertained in using it for such a purpose. We are willing to admit, with Mr. Blair, that Fargier's paper tissue is tolerably clearly defined, although not so clearly as Swan's; but we must insist that, as defined, it is fit for printing *through*, and utterly unfit for transfer purposes, whilst Swan's is specifically designed to that end.

Mr. Blair concludes his argument by observing "that transfers can be effected by Fargier's tissue is no proof that it is unfit for the purpose intended by him—namely, that of sunning through the paper—and no reason why its manufacture and sale should be fettered." If, as we think, we have shown that transfers can *not* be effected—or, certainly, not easily effected—with tissue made by Fargier's formula, the question as to its manufacture and sale can scarcely possess much interest, as no one is likely to attempt the practice of the Fargier process when more perfect, although the patented. processes are in existence. It is no part of our business to speculate on the subtleties of patent law, but we have heard it alleged by good authority that the decision in the case of Betts' patent would justify Mr. Swan in taking Fargier's tissue if it had served his purpose; that tissue, not having been brought into actual use, left it legally available for the purposes of another patentee who could secure its use.

We hailed Swan's process because it gave a possibility to permanent photographic printing; and we have maintained the validity of the patent, after very careful examination, both because it appeared legally sound, and because its rights have, we think, been fairly earned. If we are rightly informed, the tissue patented by Mr. Johnson will supersede Swan's tissue, as his method is superseding Mr. Swan's method, and in so far as this gives another impulse to carbon printing we hail it with pleasure.

If any one else will introduce a further improvement on these, we shall hail the discovery, and gladly aid its introduction; but we cannot think that the progress of carbon printing will be furthered by the use of an old form of tissue designed for another purpose, and which, if made as described, must, under any circumstances, prove a very inefficient substitute for that prepared expressly for transfer operations.

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Critical Notices.

THE HOLBEIN SOCIETY'S FACSIMILE REPRINTS. (Manchester: A. Brothers, St. Ann's Square.)

Few applications of photography have more interest and value than that in which its literal faithfulness becomes of exceeding value in reproducing in facsimile rare and precious works of literature and art; and the idea of the Holbein Society, of producing by photo-lithography literal autotypic copies of some of the choicest of old English books, in which engraving and typic rendering alike possess interest of their own, was an exceedingly happy one. The two volumes already issued and now before us form a wise introductory selection, and are admirably done, being thus alike creditable to the committee and gratifying to the subscribers.

The name of Hans Holbein needs no introduction to the most initial students of art. The singular manliness and honesty of his work, and the true insight manifest in it, whether in portraiture or the emblematical illustrations engraved on wood, in which he has put so much character, need no testimony from us. He was fortunate in the recognition of his work in his own age, as well as in its after fame. One of the noblest traits in the bluff, unscrupulous, polygamous Harry the Eighth, was his perception of the merits of Holbein, as indicated in the well-known anecdote. When a nobleman, who conceived himself grossly insulted by Holbein, demanded of his majesty that the painter should be severely punished, the king is said to have replied: "Out of seven ploughmen I can make seven lords; but out of seven lords I cannot make one Hans Holbein." The well-merited recognition of his genius obtained in his time has grown steadily since, and, despite a certain hardness in his portraiture, there are few paintings of the same age in the truth of which such implicit trust is placed, and the true and worthy qualities of which are more esteemed. The "Dance of Death," as "Les Simulachres and Historiees Faces de la Mort" is more commonly styled, is very generally known for its quaint humour, original thought and feeling, and admirable drawing; and the "Bible Figures," or "Icones Historium Veteris Testamenti," is scarcely second in reputation. The text and engravings are here reproduced by means of photo-lithography by Mr. Alfred Brothers, of Manchester, to whom, from the care bestowed in securing the nearest approach to mechanical perfection, the duty is manifestly a labour of love. The copiousness and excellence of the work of the editor, the Rev. H. Green, M.A., in introductions, translations, historical and critical notes, is beyond all praise. It is not, however, necessary that we should enter at any length into any critical literary estimate of the work here; its technical significance is the chief point of interest to the readers of these pages, although we hope that a large section of our readers are not insensible to the literary and artistic value of the work.

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* The attempt made, and confessedly abandoned because unsuccessful, by Mr. Blair, with his own tissue, does not affect this statement.

The unimpeachable fidelity of photography, as a means of presenting literal unchallengeable facsimiles of works in which the "veritable form and feature, without excess or diminution of line or point," become elements of the highest value, is here admirably exemplified. In the preface to the first volume the editor says:—

"Some explanation of the method of reproduction pursued in our work may be of interest to the subscribers. Each page of the original edition in 1538 has been copied by the ordinary process of photography. Thus a *negative* was obtained of the exact size of the original, and containing all its excellencies as well as its defects, where they exist. Some of these faults could have been removed in the after process, but it was thought preferable that no restoration should be attempted. The blemishes alluded to are not, however, to be found in all copies of the 1538 edition. For instance: in plate VII. the hands of the Emperor are not perfect, but the copy is the same as the pattern, though other impressions from the same block do not show the same imperfection, which, in this case, has the appearance of the surface of the paper being rubbed off. But there are instances showing, on a comparison of two or three copies of the same edition, that the primary wood-blocks themselves had received damage. There are also defects which Trechfels Fratres, the printers, were responsible for; and, as a matter of course, these will be found standing uncorrected.

"From the *negative* a print is taken on paper prepared with gelatine and bichromate of potash. The print is then soaked with water, and afterwards covered with transfer ink; and when the process is completed this transfer ink is found to adhere only to those parts of the paper where the sunlight has impressed the image. The finished print is next transferred to the lithographic stone; and, finally, the proofs on paper are printed with carbon ink in the ordinary manner.

"There are many photo-lithographic processes, but the one employed in this reproduction by Mr. Brothers was kindly communicated to him by Mr. Wm. Griggs, of Peckham, near London, to whom Mr. Brothers and the editor take this opportunity of expressing their best thanks. It is a process which, as slightly modified and simplified by Mr. Brothers, possesses many advantages. In proof, let the present work be examined."

Most of our readers are in a position to estimate the excellence and value of such a facsimile when we repeat, as we have already stated, that the work is well done, evidence of loving care as well as skill being abundantly manifest. When we spoke just now of the unchallengeable value of this form of reproduction, we were oblivious, for a moment, of the singular animus against every form of photographic rendering of which some writers of our day seem to be the victims. A notice of the Bible Figures in a literary contemporary is singularly unfair in its comments. Some time ago the same journal referred to the reproductive labour in the "Dance of Death" in terms of high praise; but in reference to the Bible Figures, the same journal—probably not the same writer—speaks of work in no wise inferior as "crumbling, broken, and spotty," and regards it as "lamentable" that the "clear, firm, and manly lines of the woodcutter's work in the original" should come out in such a guise. All this is so singularly unjust that we feel bound, on behalf of the art and of Mr. Brothers, to protest against it. Those familiar with such work scarcely need to be told that the woodcutter's work of three centuries and a-half ago was not singularly firm or delicate, and that what it might possess of these qualities was usually lost in the clumsy and imperfect press-work and coarse ink employed. That lithography, by its very nature, possesses, in some degree, less delicacy and precision than copperplate printing or block printing, cannot be doubted; but on examining these examples we are amazed at such a result from the old, comparatively imperfect and variable pages of the original; and we cannot but compliment Mr. Brothers on the unusual excellence he has attained in very difficult work.

A POOR MAN'S PHOTOGRAPHY AT THE GREAT PYRAMID. By Professor C. Piazzi Smyth, F.R.S.S., L. and E., Astronomer-Royal for Scotland. (London: Henry Greenwood.)

Our readers are already familiar with this work in abstract. Last December Professor Smyth read the substance of the present little volume as a paper before the Edinburgh Society, the full title of his paper being: "A Poor Man's Photography at the Great Pyramid in the year 1865, compared with that of the Ordnance Survey Establishment subsidized by London Wealth, and under the orders of Col. Sir H. James, R.E., F.R.S., at the same place four years afterwards." At the time we laid before our readers an abstract verified by the author. Here the subject is somewhat amplified; and Professor Smyth not only gives interesting and minute details of his photographic operations, but enters into an elaborate comparison of the conditions and results of the expedition organized by a "rich and powerful coalition in or near London. A coalition," he says, "which has tried unscrupulously to consign all my Pyramid reproductions to either obloquy if not oblivion; and yet whose own works at the same place, in spite of wealth, power, numbers, and more recent opportunities, have not set forth the hundredth part of the exact Pyramid particulars that mine have done; nor have they pointed to any other authorities where the same important data may be procured." Those interested in a clear, forcible, and minute statement of the case, may find it set down in this volume.

ON THE FIXING OF SILVER PRINTS.

BY W. T. BOVEY.

Among other matters which have occupied my winter leisure, my attention has been directed to the fixing department, a subject which, doubtless, will prove of interest to those who read instead of scanning the pages of the News.

Hitherto I have dealt but scantily with the all-important subject of fixing silver prints, and I much regret the omission; but, after all, it is a hard matter to be unorthodox in every particular, and I freely confess that, until recently, I clung tenaciously to the popular recognized quarter of an hour's fixation, and accepted the doctrine as one unquestionable. My recent experimental operations have, however, torn from my eyes the last shred of conservatism, and as I now see—or, at least, am pursuaded that I now see—more clearly, I am desirous of seeing others turn deserters from old notions that are based on no firmer foundation than that which some would pronounce the force of wide-spread habit.

In reference to the matter of print staining and print fading, it is well known that the diseases assume a variety of perplexing forms. Sometimes symptoms present themselves a few hours—or, at most, days—subsequent to the production and completion of the pictures; at other times weeks, months, or even years elapse ere the germs of destruction become visible; and although these germs, which betoken at all times an approaching breaking up of a photograph, may be familiar in their appearances to every experienced eye, yet it may not be out of place if I expend a few words in brief description.

At times yellow spots are seen on the outer edges of the photograph; these gradually extend until they spread out to the dimensions of a silver shilling, when further decomposition is stayed, and the remainder of the picture continues as bright and perfect as could be desired. [*Note.*—The appearances just described must not be confounded with the peculiar orange spots which during the hot months of summer are seen when the prints are taken from the washing trough. A long and anxious chase had I in quest of the cause of this phenomenon, which was occasioning serious losses in more than one direction. I found it at last in the shape of small slugs, which attach themselves to the surface of the print, and remain there just long enough to be poisoned, when they fall off, leaving behind those orange-hued spots which give no clue to the cause of their existence.]

Sometimes, instead of at the edges of the prints, the spots, as first described, are formed on the centre; at other times they spread in minute spots over the entire surface of the paper. But as each of these appearances is due to imperfect fixation, I need dwell no longer on details that are separate from the immediate causes.

If my readers would seek causes from the beginning, let them hold before them a piece of albumen paper, and proceed to view its texture by transmitted light. It will then be perceived that although the texture is tolerably uniform, there are occasional spots of exceptional opacity. These are doubtless owing to accidental flaws in the pulp or sizing. and they, being somewhat hard and non penetrative, not unfrequently occasion unfixed spots on the most carefully treated prints. The formation of air-bells on the silvered surface is also a fruitful cause of spotting. But neither the flaws of size and texture, nor the forming of air-bells, cause all the mischief, as I shall now proceed to show by putting forward an illustrative case or two.

Intelligent printer A. has produced a fine batch of prints, and whistles merrily in the ecstacies of bright anticipation, for hope tells its flattering tale for several minutes subsequent to the prints entering the fixing solution. At five minutes the prints are rich in promise. At ten minutes of immersion they set in doubtful. At the orthodox quarter of an hour—Oh, the despair of the moment!—the prints are black, ruined, and the blackness on the morrow, when prints are dried, proclaim ruin and waste. Intelligent printer, of course, ruminates sorrowfully over the matter. Ah! Light breaks in on his mind. 'Twas the fixing business that fixed the adverse destiny of the prints. At five minutes the prints were full of rich promise; at seven and a half minutes they showed perfection; then set in the tide of retrogression. The rest has been already told.

The effect thus skilfully traced to causes leaves the remedy most obvious: "*Memo*, to fix seven and a-half minutes, in lieu of the usual fifteen as per guide-book to photography;" and the result of the practically applied "wrinkle" bears out but too apparently the soundness of an unsound train of reasoning. Had our intelligent printer only considered that the gradual blackening of his prints was occasioned by the dissolving-out of the soluble portion of his prints, he would at once have suspected over-toning, and have shaped his remedy accordingly. But, acting on false premises, he allows the soluble salts, which should at all times be entirely eradicated, to remain; and thus he secures a temporary advantage at the expense of permanency and the reputation of poor, over-abused photography.

The next personage waiting to be introduced is intelligent factotum B., who cleans glasses, runs errands, and who, like the operatic hero *Figaro*, is here, there, and everywhere—the handy man. Well, *Figaro* is the fixer; and *Figaro*, of course, is wont to work by his "lights." He takes each print by a corner daintily, and proceeds to immerse it into the hypo carefully. Being ordered to fix but few prints at each operation, *Figaro* deems it necessary to work also quickly, so he gives each batch a brief turn or two in the solution, and the prints are fixed for a speedy disfiguration. Minute spots become big spots; and the Hon. Mrs. Fitzwiggins is led to pronounce a photograph a thing of annoyance, that should, by the wise, be religiously shunned.*

We now turn to carefully orthodox printer C., who represents a goodly number of his co-workers. He places his prints carefully in the hypo of standard strength. He is most particular in removing air-bells, and takes special care that no two prints stick together. With watch before him, he watches the tedious minutes (fifteen) pass, when the prints are hastily removed from the solution, and placed—Oh, so carefully!—in a broad and shallow dish. From thence the course is onward to twin next and next, and so on to the end. In justice to C., let it of him be said that he has escaped the errors of the two who take precedence of him in our list of illustrations. His work is more complete; except some accidental non-impervious spots intervene, his prints are properly fixed. But as prevention is easier than cure, it were well to stretch the time of fixing to five or ten minutes more. The change is easy, and the tests I have applied, both visual and experimental, show the suggestion to be worthy of adoption. A print, when viewed by transmitted light, should exhibit a perfect and uniform transparency, otherwise the soluble salts of silver are not yet removed.

There is still another form of print fading which demands notice ere I lay aside my pen. I allude to that jaundiced defect which spreads over the entire surface of the diseased picture. First the whites, then the entire, fall victim to the attack of yellow; and, judging from the examples I have noticed in every album and in each shop-window that contains photographs, the form of disease now alluded to is the most common and generally prevailing. In search of the cause, let us, then, endeavour to produce the yellows at will. To effect this, take a print from the fixing, and pass it, from brief washing, into a dish of water to which has been added a few drops of hypo solution. Such a mixture, in point of stern fact, represents the washings of thousands of photographs daily. Leave the experimental picture in this water a few hours, and a jaundiced print will result from the experiment; or, to save time, mix a dilute solution of sulphide of potassium or ammonium, immerse the print, and jaundice speedily follows the immersion. Now it cannot be too strongly stated, in reference to this matter of washing prints, that the great object to be sought after is a plentiful supply of water, and capacity to hold sufficient of the fluid to rise in the onset. None of your broad and shallow pie-dishes, that are warranted never to swamp the meat in gravy: a good trough, that has a many-gallon capacity, with an applied arrangement that lets the water out directly the prints are sent in. Oh, that it were possible to secure the aid of some broad and running stream, which would send every trace of hypo off!—and, if well fixed, permanency would be sure, I ween. But the wish is vain; so I advocate an available substitute. A fruitful cause of jaundiced prints I must not overlook; viz., the employment of stale and stinking eggs in the preparation of albumen paper. It has been said that a bright surface can only be obtained from decomposing albumen. Nonsense! eggs of yesterday's "cackle" are as effective as eggs of last year's production. True the former would prove the least profitable to the albuminizer, but then it is the most sure; certainly its use is the most honest, and every honest man, on that account, would prefer using it. Note the experiment with the sulphides just now alluded to: their effect on a silver print was seen to be destructive. Can the sulphuretted hydrogen, distilled by decomposition from rotten eggs, prove less devastating to the prints of which it forms part? Consider.

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* This is no stretch of imagination. 'Twas but a few months since I watched the *Figaro* of a large establishment at his work. He worked as I have just described. I left him a wiser—let us hope a better—man.

In conclusion, I have but another remark to add. We cannot set aside silver printing, enthusiasts in carbon matters notwithstanding. Let us, then, take facts as they stand, and let us, one and all, strive to overcome the difficulty that causes a stigma to attach itself to the art called photography.

FURTHER REMARKS ON CARBON TISSUES, ETC.

BY WM. BLAIR.

The article by the Editor of this Journal in the number of 14th April, on "The Position of the Carbon Process," cannot fail to have been read with interest by all who desire to know the legal position of the patent therein discussed, and the facts upon which its claims are based. The subject is no doubt ably handled, and it is highly satisfactory to have such a clear statement, both of fact and law, upon the affirmative side. It may, in the main, be sound. I have never argued that Mr. Swan's patent was *wholly* invalid—that is, in all the details contained in it; and, on the other hand, I do not think it has been contended on the other side that the *whole* of the manipulations contained in the specification are covered by the patent. It has always been admitted that what was known and published before was not covered by this patent, although Mr. Swan was entitled to take advantage of what was known before to build his own improvements upon, and to detail the whole, that his own improvements might be better understood. If this be correct, as I presume it is, then it is evident that the mere fact that in Mr. Swan's hands carbon printing became a commercial success, does not prove that the whole details in his specification are his; and, still less, without a knowledge of what was previously done, does it show what was his, and what was not his. The argument, then, drawn from commercial success has always appeared to me to partake more of the nature of an appeal to the feelings than to an intelligent discrimination of what the patent really embraces. It is more a popular argument than a legal or logical one, except the specific thing be pointed out which gave rise to the commercial success.

It is not my intention at present to attempt any systematic reply to the Editor's lucid exposition. I thank the Editor for his acknowledgments of fairness on my part, and most readily accord the same to him. That he does not appear, in one view, to be on the side of the public in this question is no reason whatever for ascribing improper motives, for it is undoubtedly an editorial duty to protect the interests of individuals as much as to vindicate public rights; and in almost every case the inconsiderate imputation of unworthy motives is as uncharitable as it is generally wide of the mark.

Notwithstanding my appreciation of the general line of argument—or rather, perhaps, explanation—followed, I may be allowed to point out one or two things into which I think the Editor has fallen into mistake, but the correct apprehension of which appears, notwithstanding, to be material to arriving at a right conclusion.

In the first place, it should be understood that the question at present raised was simply the manufacture of pigmented gelatine *paper* or paper tissue, so prepared as to be capable, if desired, of being used for the purposes of transfer. Keeping this issue in view, I do not think the Editor has made a correct comparison between Fargier's tissue and Swan's. In speaking of Fargier's paper tissue the Editor says: "His idea in preparing a paper tissue was clearly *not* to render it suitable for transfer." But what of that if, in point of fact, it really turned out to be suitable for transfer? But the Editor goes on, and says further: "He (Fargier) indicates the use of the 'thinnest possible' paper which is to be printed *through*. To secure this end most perfectly the thinnest available coating of pigmented gelatine would be necessary, and the tissue so prepared would not be suitable for a transfer process," &c. To this statement I must take exception. This is not Fargier's account of his own tissue. On the contrary, there is a condition added; viz., that the gelatine must be very thin as well as the paper, a condition which Fargier never contemplated, and which is altogether unnecessary in the process. It is in the *direct* method of printing that a *thin coating* became essential. In any of the *through* methods there was and is no more necessity for adhering to the thinness of the coating than in the transfer processes. But what says Fargier himself in his specification? His words are: "Apply *one or more* coats of the gelatinous solution hereinbefore referred to." He does not limit or stint the quantity, but leaves it, as it might safely be left, to the discretion of the operator. And it is rather extraordinary how very nearly his directions tally with those of Mr. Swan in his specification as regards paper tissue. Mr. Swan describes how he coats his paper by drawing or raising it off the surface of the tissue-compound kept fluid in a trough; and he adds: "And I sometimes apply *more than one coating* to the same sheet in this manner." Now where is the distinction here between the two descriptions for preparing the paper, as given by the two patentees themselves? Neither Fargier nor Swan, in regard to their *paper* tissue, lay down any rule as to the thickness of the coating required; and more particularly in Fargier's case was no rule necessary, as the coating for his process might indifferently be thick or thin, provided it could only be dried within a reasonable time.

But the Editor endeavours to show a broader distinction still between the characteristics of the two tissues, in which I humbly think he is even further mistaken. He says: "Now in Swan's process we have for the first time (?) the conditions of a transfer process clearly apprehended and set down, with an approximate statement of the proportions and quantity of material necessary to each square foot of tissue." Leaving, in the meantime, the first part of this statement (the correctness of which, after the discussions that had taken place before the date of Swan's patent, and the actual transfer prints that had been produced, particularly by Fargier, I cannot for a moment admit), I wish to call attention to the fact that this approximate statement of the material necessary to each square foot of tissue is not given by Mr. Swan as applicable to his *paper tissue*, which, as I said before, has now become the subject of discussion. Mr. Swan describes how he prepared his *collodion tissue* upon glass; and, in reference to this tissue, he mentions that he used about two ounces of the pigmented gelatine to cover a square foot; but he makes no such statement in regard to his paper tissue, and to which, indeed, from the manner in which it was prepared, the gelatine could not well be applied in that measured way. Besides, it has not been at all proved that the quantity mentioned by Mr. Swan must necessarily be attended to in the preparation of the tissue. The paper tissue made by him at first was so overloaded as to create a serious drawback to its use. It is some years ago since I mentioned, in some of the journals, that for the sake of rapid desiccation I run a quantity of his tissue over again upon other paper, made it cover more than double its original space, and then, from the great reduction in its thickness, got transfer pictures with it better than in its original state, because it was still thick enough for that process, and was much more speedily dried after being sensitized. The collodion tissue perhaps required a considerable thickness of gelatine, as it had to be removed from the glass, when dry, to be sunned on the collodion side, and may have required a certain strength to bear the necessary handling; but otherwise, when it was removed from the glass, it was used as a *through* process—that is, it was sunned through the collodion, which stood in the place of transparent paper; and for this part of the operation and the after washing the coating of gelatine might have been as thin as any of the *through paper* processes. The use of such thickness of gelatine in this particular tissue, therefore, does not show any clear apprehension on Mr. Swan's part of the conditions of a transfer process. But what I chiefly object to is, the mixing up of the properties and uses of this tissue, and confounding these with the paper tissue, when it is only the latter that is the subject of investigation. I am very far from alleging that this is done intentionally; I hope that will not be supposed; but accuracy in these little points goes far to affect the issue to be arrived at, and I trust to be excused for pointing it out.

With these alterations on the facts, then, I am disposed to hold that the case of Bett, quoted by the Editor, does not apply. Dobbs' patent had not so defined his process that others could work it; Betts' specification did so, and hence it stood. But Fargier's paper tissue is just as clearly defined as Mr. Swan's, and any body can make it. There is no limit to the thickness of the coating in either case; and who can tell, especially if thin paper be used as the support, where the one merges into the other? That transfers can be effected by Fargier's tissue is no proof that it is unfit for the purpose intended by him—viz., that of sunning through the paper—and no reason why its manufacture and sale should be fettered.

If I were called on to say wherein consisted the secret of Mr. Swan's success, I would be disposed to ascribe it chiefly to his use of caoutchouc varnish as an excellent medium for holding the tissue during development, and for permitting the retransfer after development, which enabled him immediately to take advantage of the ordinary negatives then in use, and his ingenious adaptation of the necessary machinery for immediately working the process upon a commercial scale. To ascribe this result merely to his tissue, and particularly to his paper tissue, is, in my opinion, to assign an inadequate reason for it.

I write these remarks in the interest of no party, but merely to bring out what I consider the real state of the facts. As for myself, I am now even independent of paper tissue; I am getting as good prints from cloth tissue as ever I got from paper, and unless I happen to mark the prints at the time, I cannot afterwards tell which is which; indeed, in many respects, I like the cloth better, and its additional expense is the merest trifle. I cannot understand how silver prints can compete with carbon in the matter of expense. I do not believe that it costs me half the money that silver prints would do, and the carbon prints are finished off in less time.

I most heartily join with the Editor in recommending that attention should be given to carbon printing. Its comparative stability is unquestionable, and its suitableness for every kind of work is now undoubted. It is probably difficult for old hands to get out of a beaten track. Old habits and old notions are not easily laid aside. But still, it is perhaps not too much to ask such as have long been accustomed to stain their fingers with silver, to place some little faith in what is told them by those who have tried both methods. It is said of a certain Scotchman that he confessed that honesty was the best policy, for he had "tried baith." In like manner I would be disposed to testify that carbon is the best process, and I have tried both.

In these circumstances I am always sorry when I see it made to appear more difficult that it really is; and here I think is an example of it. It would seem that Mr Johnson has made the Autotype Company abandon their old method of immersing the tissue for the purpose of sensitizing it. He finds floating better; but he has a difficulty in floating the tissue, and here is the ingenious method adopted to obtain a thorough float. A margin is turned back over, the tissue is rolled up, and then it is allowed to unroll itself, and push its way along the bath, which it does without air-bubbles or wetting of the back. Now this may be a very good plan for those who have learned it, and have refractory tissue to deal with, but it certainly looks rather like a sleight-of-hand trick. Photographers are accustomed to float albuminized paper, and will probably prefer to float gelatinized paper in the same way. Well, let them be told they will find little or no difficulty in the matter. Let them keep their tissue in sheets not rolled up, but in books or blads, and if, when they come to float, the sheet has a tendency to curl inward, let them breathe over its surface, and it will remain pliant, and be easily laid on the bath. Except in certain exceptional cases, I have always floated my tissue, and found no real difficulty. The dry back is a great advantage. It enables you to lay the sheet down on any level article when taken from the bath, and you can pin it up to dry at convenience.

But this paper is again getting beyond due bounds, and therefore I shall here close for the present.

Bridgend, Perth, April, 1870.

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PHOTO-MECHANICAL PRINTING PROCESSES ON THE CONTINENT.

BY LIEUT. J. WATERHOUSE, R.A.

[We resume our extracts from Lieut Waterhouse's report continuing the photo-engraving and photo-lithographic operations in France.]

"*M. Placet's Process*—M. Placet works only in half-tone, and has produced some very fine results. He did not tell me his exact method of proceeding, but referred me to a photographic journal, in which the principles of it are described as follows:—

"'A film of bichromated gelatine is exposed under a transmitted positive cliche, so that the light enters on the under side of the film; this is done either by covering the cliche itself with the sensitive layer, or by using a thin transparent support for it. After exposure to light the film is soaked in water. Those parts which have been protected from the light swell up, in proportion to the amount of the action of the light. By treating the mould in relief thus obtained with metallic solutions, an electrotype copy in copper can be made, which may be printed in the copper-plate press. If a negative cliche is used, the unaltered gelatine must be dissolved away, or a second electrotype must be made. The *modus operandi* may differ, but the principle always remains the same.'

"*Printing on the Reverse Side.—Swelling of the Unaltered Gelatine.—'Galvanoplasty.'*—This process is the same in principle as that of Paul Pretsch, of Vienna, which was introduced into England some time ago, but failed as a commercial speculation.

"I saw some silver prints and some of M. Placet's engraved proofs, from the same negative, and noticed that there was a great deal more detail in the engraved proofs than in the silver prints; they also appeared sharper. I observed that all his engraved plates were enfaced with steel. He explained to me the advantages of the process in enabling several thousand proofs to be pulled from an electrotyped copper plate, and told me that it was especially necessary in his process, in order to preserve the finest tints. He also showed me some transferred negatives, and the tissue he made use of for supporting them when transferred; this consisted of the now well-known castor oil collodion. I have to thank M. Placet for many civilities and a great deal of useful information."

"*M. Baldus' Process.*—M. Baldus was kind enough to show me several proofs, some of which were fine, but I did not consider them, on the whole, so good as those of M. Durand. I have every reason to believe that his process is similar to that of Durand, and, like his, a modification of that of Niepce de St. Victor. I saw some of his negatives; they were clear, but not very sharp, and could not give a good result without much retouching. He obtains them by the dry collodion process. Some specimens in half-tone were good, but not so good as Placet's; they very much resembled photo-lithographs in half-tone, and were somewhat coarse in the grain. His plates were totally unlike Placet's, but were enfaced with steel, and I saw the process of enfacing them in operation."

"*M. Drivet's Process.*—M. Drivet's process differs in some respects from all the others, though in principle it is, I believe, much the same as Placet's. The chief difference is an artificial grain, in the form of a cross-hatching all over the plate, which gives rather an unpleasant effect. I do not know his method of working, but he showed me a cliche on which were the image, the grain, and the relief at the same time; he has then only to silver the surface by some means, and take an electrotype. He told me he worked on a film more sensitive than the bichromate of potash and gelatine, but his process must be based on the reactions of chromic salts upon gelatine. The cliche I saw had no visible trace of chromate salt on it, and had the colour and the appearance both of transmitted and reflected light of an ordinary iron negative; but on examining the surface the relief and grain were easily seen. He showed me some very fine reproductions of maps, and also several fine proofs in half-tones, but the *uniform* artificial grain in these last destroys their beauty very much, and, moreover, is not necessary, as the swelled gelatine gives of itself a most perfect grain, large in the shadows and small in the lights. M. Drivet told me he was about to replace it by a grain resembling that of an aqua-tint engraving."

"Lithographic Establishments.

"I visited the lithographic printing establishments of Lemercier, Engelmann, and Erhard.

"*Lemercier's Lithographic Establishment.*—The well-known establishment of Lemercier is perhaps the largest in Paris, and turns out lithographic work of all descriptions. By the courtesy of M. Lemercier, I was enabled to go over it, and saw much that was new to me; among other things, the process of chromo-lithography. I observed that all the hand lithographic presses were by Brisset, and that Brisset's frames for registering were used, but not the little pieces of sheet brass on the edges of the paper, as at the Imprimerie Imperiale. For some work they still use the needles for registering. There were four lithographic printing machines moved by a steam engine of twelve-horse power, which also set in motion a machine for graining stones, and another for grinding ink. The former of these will grain four large stones or sixteen small ones at a time."

"*Engelmann's Chromo-Lithographic Establishment.*—This establishment is chiefly known for a very superior class of chromo-lithographic printing, and also for the same applied to diaphanie or artificial stained glass. M. Engelmann kindly conducted me over it, but there were not many novelties. His presses are of the usual French pattern; he uses Brisset's frames for registering. His great aim is precision, and his proofs show how carefully this is attended to. In some of the sheets of diaphanie there were more than twenty printings, but not one of them was out of place a hair's breadth. He said that in order to produce the best results the printing must often be delayed till a more favourable time. He was anxious to adopt the use of zinc plates, on account of the facilities they offer for storing large numbers, and had made experiments with them, but they were objected to on account of the colour (he showed me a plate which was of a dirty brown colour, as if it had been acted upon by some solution of copper); and said he thought some alloy might be found which would answer better than zinc."

"*Erhard's Litho-Engraving Establishment.*—This establishment is almost solely for engraving on stone, and is celebrated for the excellence of the work turned out.

"M. Erhard received me very cordially, and I am indebted to him for information on the process and for several useful hints.

"The process of engraving on stone is much practised in Germany and in the east of France. In England it is, I believe, but little used, though it is capable of giving beautiful results, and is particularly adapted for map work. It is at least thirty per cent. cheaper than engraving on copper, and when well done the results can scarcely be distinguished from copper plate; the stones stand the wear and tear of printing very well, and as many as 12,000 proofs have been pulled from a single stone without deterioration.

"The *modus operandi* is as follows:—

"The stone is prepared in the ordinary way, and is then covered with a very weak solution of gum; and, when dry, a little lampblack, red ochre, or other pigment is dusted over it, and spread evenly with the hand or a fine linen rubber, till the colour is even, and no dust remains. The subject is then traced in the ordinary way, and engraved with steel or diamond points, and shows clearly in white lines on a coloured ground. Before commencing the lettering, the stone is ruled all over with parallel red lines. The letters are drawn in outline with a diamond point, and finished with a steel point. For flat and other tints, ruling machines are used. When the engraving is finished, a small quantity of linseed oil is poured on and spread over the stone; and, after a short time, wiped off, and then the gum is removed with a wet cloth. While the stone is still damp, it is inked in with a dabber. The ink is only taken by the lines which have been touched by the oil, the ground remaining white. After inking in with the dabber, a roller is passed over the stone to take off any smuttiness. For printing, greater pressure is required than for ordinary lithography, and the paper is made wetter. In order to economize stones and prevent their breaking, they are used very thin, and are backed with slate."

FIR CONE DRY PROCESS.

M. Dussol, at a recent meeting of the French Society, described a dry process which he found very successful. The collodion employed in the process is compounded in the following proportions:—

Sulphuric ether of 62°	... 400	grammes
Rectified alcohol of 40°	... 250	"
Neutral guncotton ...	... 6	"
Iodide of ammonium ...	... 1½	"
Iodide of sodium ...	... 1½	"
Iodide of cadmium ...	... 2	"
Bromide of ammonium	... 2	"

As soon as the plate has been coated with the above and the film well set, it is plunged into a sensitizing bath made up with fused nitrate of silver of nine per cent. strength. It is allowed to remain for a period of five or ten minutes in the solution, and is then carefully washed with distilled or rain water, and, after draining, covered with a solution prepared as under:—

Boiling distilled water	... 100	grammes
Fir cones	... 10	"
Alcohol	... 5	"
Sugar-candy	... 5	"

An infusion of the fir cones is first made and thoroughly filtered, and when a clear liquid has been obtained, the alcohol is added, and the mixture again filtered. The solution is poured on and off the plate two or three times, and the latter is then allowed to dry spontaneously in a locality perfectly sheltered from the light.

After exposure, which occupies from one to ten minutes, with a simple lens, according to circumstances, the plate is immersed for a few instants in a rain or distilled water bath, to moisten the film, or, better still, in a three per cent. solution of nitrate of silver, or four per cent. solution of carbonate of ammonia; the development of the image is then proceeded with by aid of:—

No. 1.	Pyrogallic acid, dissolved in 15 cub. cents. of absolute alcohol	... 1	gramme
	Distilled water	... 300	grammes
No. 2.	Nitrate of silver	... 4	"
	Citric acid	... 3	"
	Distilled water	... 300	"

The plate is covered at one sweep with a small quantity of No. 1 solution; if it has been sufficiently exposed, and all detail becomes apparent, it suffices to add a few drops of No. 2 solution to No. 1, and to manipulate therewith until the high lights have attained sufficient density to produce a good negative. The latter is finally washed with care, and fixed in a concentrated solution of hyposulphite of soda.

The varnishing of the *cliche* and printing are conducted in the ordinary way.

ENLARGEMENT BY A DEVELOPING PROCESS.

BY M. LE MARQUIS MAISON.[*]

The process I employ for the production of the enlargements forwarded to the Society is not a new one, but, nevertheless, so little known and used that I do not hesitate to recall it to the attention of my readers. The half-sheet pictures exhibited are all printed from small negatives with an exposure of from half a minute to five minutes, during the recent dull weather. They leave nothing to be desired, I think, either in regard to tone or sharpness, and the manipulations are so simple as to be within the scope of every operator.

A sheet of salted arrowroot paper, such as may be purchased in commerce, is floated on a bath of:—

Bromide of zinc	5 grammes
Water	1,000 cubic cents.

It is suspended on a line to dry, and then sensitized in the ordinary way upon a solution compounded of:—

Water	1,000 cubic cents.
Nitrate of silver	100 grammes
Citric acid	2 „

On its exit from the bath, and while still wet, the sheet is hung upon the screen of the enlarging instrument, and exposed to the action of the sun's rays through the negative until an outline of the image becomes apparent.

The sheet is developed by being floated face downwards upon a solution of:—

Pyrogallic acid	2 grammes
Glacial acetic acid... ...	75 cubic cents.
Water	1,000 „ „

The bath is tilted to and fro until the image is developed, a fact discoverable by lifting the corners of the print from time to time; it is then removed to a water bath, attention being paid to the circumstance that as long as the paper remains impregnated with the developer the action of the latter continues. The print is finally fixed in hyposulphite, without washing; if the exposure has been short, and the development somewhat prolonged, the tone will be of a bluish-black; but if, on the other hand, the exposure has been so long as to necessitate but slight development, the result will be of a reddish-brown colour.

By this process I have obtained superior results to those given by methods in which the paper is prepared with iodide or bromide of silver, for in the latter instances not only is the tone of the pictures a very disagreeable one, but they are without any artistic value, and liable to become spotted and fogged. The salted arrowroot paper I adopted in preference to an ordinary salted paper, because the former has more surface, is more brilliant, and also affords a better field for retouching, an operation of considerable importance in photographic enlargements.

Greater sensitiveness may be attained if, instead of floating the paper before sensitizing upon a bath of bromide of zinc, this compound is added direct to the sizing material with which the paper is covered to render it suitable for photographic purposes. As, however, paper of this kind cannot be purchased, there is no alternative but for the consumer to prepare it himself in the manner indicated, and the sensitiveness obtained is indeed sufficient for all ordinary purposes.

Albuminized paper, as every one knows, yields deplorable results if employed for this description of work, the action of the developer upon the albumen surface giving rise to all kinds of spots and stains; by immersing the paper, however, previously in a saturated solution of bichloride of mercury it may be rendered more suitable for the purpose; but all brilliancy disappears, and the material becomes more fragile.

Bromide of zinc appears to me more suitable for the preliminary bath before sensitizing than any other salts of the same class, some experiments undertaken to determine the question all pointing to this conclusion. The iodide of zinc in collodion affords very good results, if the mixture is used about three days after preparation; after this period the sensitiveness of the collodion abates somewhat, and it is well, therefore, to mix the same in small quantities only for use.

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[*] Read before the French Photographic Society.

ON STEREOGRAMS OF THE PLANET MARS.

BY R. J. MANN, M.D., F.R.A.S., ETC.[*]

The position, size, and condition of the planet Mars, and the reason for its face being only favourably placed for close observation during a brief period at intervals of 780 days, having been explained, the author proceeded:—

Now it is found that these markings are, in one sense, fixed and permanent; they can be seen under the same general plan of grouping and outline again and again, and after long intervals; but they cannot *always* be seen. They are sometimes masked and concealed, although the planet is high in the heavens with a large and bright face. The fact is that Mars is furnished with a drapery of moveable curtains, and that when the curtains are unfolded the internal aspects of the planet's face are revealed, but when they are drawn close over the face the curtains alone are visible from the earth. The planet Mars is enveloped, exactly in the same manner as its next neighbour the earth, in a dense screen of mists and cloud; and it is only at the favourable moments when these clouds are rent assunder, and at the fortunate spots where these mists are temporarily swept away, that the actual surface of the planet itself can be seen. When the cloud-curtains are most closely drawn, the hue of the planet is greenish white; when the curtains are flung open, the planet wears a ruddy light. The planet's body is red, like the red sandstone of the earth. The planet's drapery of clouds is of the same tinge as the clouds of the earth when seen hanging in masses under reflected illumination.

Under these circumstances, the only way in which anything like an idea can be formed of what the appearance of the planet would be if its drapery of cloud was entirely removed, and its face laid bare during one entire period of its rotation before the earth and sun, is to fit together piecemeal the several passing glimpses that are caught of different parts of its surface at favourable times. The effectual performance of this task is a matter of considerable delicacy and difficulty. The best views are so fleeting and capricious that the observer has to watch continually for hours to catch, it may perhaps be, but a momentary glimpse, which then has to be quickly fixed in the mind in order that it may be accurately transferred into the form of an enduring record. And this task can only be worked at, it will be remembered, when the planet is in opposition—that is, when it is on the same side of the sun as the earth, and therefore in its nearest approach to the observer—a circumstance which recurs after intervals of 780 days. Various observers have, however, in late years been steadily devoting themselves to this labour. The attention of Sir Wm. Herschel had been drawn to the planet's fitful revelations of its intrinsic condition as early as the year 1783. Between the years 1830 and 1841 the German observers, Beer and Madler, made more than 100 drawings of exceptionally good appearances of the planet. In the years 1862 and 1864 Mr. J. Joynson executed nearly 200 sketches. From 1852 to 1865 the Rev. W. R. Dawes worked assiduously in the same direction; and since then Father Secchi, of Rome, Mr. Lockyer, and Mr. J. Browning have pursued the same track. One recent invention in instrumental contrivance has very materially extended the facilities for observations of this particular character. Instruments of considerable optical power are indispensable for the work. The observations of Beer and Madler were made with a fine telescope of Fraunhofer's construction, which enlarged the apparent dimensions of the planet from 22 seconds to 110 minutes of arc, and which made its disc seem nearly four times as broad as the moon. Now instruments of this class, until very recently, have been very costly affairs. But through the great ingenuity and skill of Mr. With, instruments of a high order of merit and power can be now supplied at something like one-fourth the cost of those of an earlier time. Mr. With's telescopes are reflecting instruments in which the mirror is made of silvered glass, glass being much more easily worked into perfect form than the old speculum-metal, and silver affording a far more brilliant surface than the mixture of copper and tin. The mirrors, however, of these telescopes, it must be understood, are like looking-glasses turned inside out. The silver is placed in front, and not behind the layer of vitreous substance. The glass is only the mould, or form, which gives shape to the bright silver. Upon this form the thinnest possible film of the highly reflective metal is deposited by a chemical process, and then gently burnished into brightness. The film is practically so thin that it has the same true figure as the subjacent glass, at the same time that it has also its own brilliant lustre. Mr. Browning works with a telescope of this character, which has an aperture and mirror of 8½ inches diameter.

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[*] Read before the Photographic Society.

Now photography, which is becoming continually, with each succeeding year, a more valuable and efficient ally to the astronomer, is as yet unfortunately unable to cope with work such as the delineation of the appearances on Mars. If photographic snap shots could be incessantly taken at Mars during its periods of opposition, as snap shots are now taken at the sun, each transient aspect of the planet would be caught and placed upon permanent record, with a great diminution in the labour which has now to be given to the task, and with a no less marked increase of value and certainty in the results. This, however, cannot yet be done, because the actinic power of the largely magnified image of the planet is very low, and because the complex movements of the planet and the earth both render prolonged exposures with any exactness of definition impracticable. The problem which the photographer would have to solve in directly photographing Mars would be to secure the image of an exceedingly faint object, while both the object and the camera are in irregular motion. Mr. Browning has nevertheless shown that there is something which photography can do in regard to this planet, although it cannot make the planet sit for its portrait. It can enable any pair of human eyes to contemplate the picture of the planet exactly as it would be seen if at some favourable instant it could be caught entirely stripped of its veil of cloud. It can bring all the thousand-and-one results of patient and prolonged study and watching together into one glance. Such are in fact the stereograms of Mars which Mr. Browning has prepared, and which are now before the meeting.

The process which Mr. Browning has adopted is simply this: he has availed himself of all the best observations of the aspects of Mars which have been recorded from time to time, and which have also been mapped down upon paper as a sort of Mercator's chart by Mr. Proctor, and has delineated these boldly upon the surface of a large globe, fitting and fusing the different piecemeal fragments into one harmonious whole. This globe delineation of Mars was exhibited at a meeting of the Royal Astronomical Society in the spring of the year 1868. It constitutes a very interesting and complete summary of the results which have been so far attained, and in that point of view leaves scarcely anything to be desired. But this globe, unfortunately, cannot itself be easily multiplied so as to be placed in the hands of the large army of observers who are now organizing their forces for the continuation of this investigation, and who above all things need some such guide in their labours.

Mr. Browning has most ingeniously and satisfactorily compensated for this defect, and rendered his globe of universal service, by preparing a series of stereogram photographs of its several sides. When the stereograms of these several phases are placed in the stereoscope, Mars is seen at one glance, just as it has been seen by many pairs of eyes working assiduously on a thousand opportunities. Any observer who has these stereograms, by a simple process of direct comparison can now at any instant tell whether any new observation he may have the opportunity to make adds anything to the facts that have been noted before. The stereoscopic effect in these stereograms has been secured by changing the point of view to the requisite angular extent in each pair of pictures, and by softening the circumferential portions of the delineations. The first view is centred about Maraldi's Sea and Secchi's Continent; the second about Madler's Continent; the third about Jacob's Island, and Dawes's Continent, and Forked Bay; and the fourth about Herschel's Continent and Dawes's Ocean.

It now only remains to draw attention, as briefly as may be, to the leading features which are developed in these interesting delineations of Mars, and to the chief deductions which seem to be established under the examinations of the planet which have thus far been made. Under the advantages that have been recently enjoyed, from the employment of large-apertured telescopes, and from the use of the pure silver reflectors, which have great capacity for securing and transmitting the impressions of colour, it has become unmistakably obvious that the brighter patches of the planet's surface are of a ruddy hue, while the darker areas are for the most part greenish or bluish grey. Mr. Browning has taken some pains to determine the exact tint of the red colour, and he states that it varies from rose-madder to burnt ochre. It very closely resembles the hue of some of the red sandstone formations of the earth. Certain spectroscopic observations made by Mr. Huggins leave no reasonable ground to doubt that the red colour is due to the physical character of the actual substance of those portions of the planet's surface. The ruddy hue is at all times less strongly marked towards the border of the visible disc of the planet, where it is more masked in consequence of the reflected light having to pass through deeper tracks of the planet's atmosphere than in more central regions. It is also very much more intense at some returns of the planet into the favourable position of opposition than it is at others. Thus, for instance, the planet was much more distinctly red in the year 1868 than it was in 1864. This seems to indicate that clouds are more prevalent in the planetary atmosphere at some times than at others. The greenish or bluish-grey patches have just such a character of light as would be reflected from large oceans of water. The red and grey patches of Mars are therefore now accepted as indicating a very high degree of probability that these are actually continents and seas, which are contemplated, by chance glimpses, upon the planet's surface.

But if this be the case, there can scarcely be a doubt that the continents are more compact and less broken in upon by the marginal incursions of water than the terrestrial continents are. This very interesting peculiarity is at once evident upon looking at the stereograms. The explanation of the peculiarity probably is, that while the general conditions of atmosphere, ocean, and land upon Mars are analogous to those which obtain upon the earth—while there are continents and seas, and while the water is raised under the solar influence from the latter and transported away through the atmosphere, to be deposited at uncertain intervals upon the land—the operation of this influence has been considerably modified and softened by the lessened solar force which is brought into play on the surface of Mars.

The actual amount of solar light and heat which Mars receives from the great central luminary is less than one-half the amount which is conferred upon the earth; in more exact numbers, the proportion is $\frac{43}{100}$.

From some careful investigations made by the philosopher Zollner, it appears that Mars appropriates for his own intrinsic use something more than seven-tenths (or, more exactly, ·7328 parts) of the solar energy which it receives, and reflects into space nearly three-tenths (or, more exactly, ·2672 parts).

With lessened solar force less vapour is raised into the atmosphere, and less rain is precipitated upon the land. There are, therefore, less vigorous traces of the changes that are worked by the wearing away of high land under the action of running water. Something also of the difference of sculpturing and contour are most probably due to the fact that a globe having only one-seventh part the volume of the earth would pass from the primeval incandescent and plastic condition into the hardened and rigid form much more rapidly, and therefore would not have the wrinklings and foldings of its contracted crust arranged in exactly the same way as the wrinklings and foldings of the crust of the larger earth.

In the progress of the paper, allusion was made to the construction of Mr. With's silvered glass reflecting telescopes, and the value of those instruments in observing the appearances of the newer planets. The snow accumulations observed in the polar regions of the planet were also described, and the effect of the inclination of the axis evident in certain portions of the stereograms, and the movements of the planet in modifying the seasons of the planetary year. The labours of Mr. Proctor in deducing the most exact period for the planet's rotation were also noticed in detail, and some other interesting peculiarities of the planet's physical conditions were referred to.

Correspondence.

ENAMELLING MOUNTED PRINTS.

Sir,—In your column "To Correspondents," I have repeatedly seen a formula given for enamelling cartes. I think it first appeared in your Year-Book for 1854 or 1855, and a more useless one, I believe, has seldom been allowed a place in the News. In the first place, suppose we succeed in stripping the unmounted paper print with enamel film intact from the glass. How are we to spot out the picture, a process that nearly every print must go through, as we cannot do it before applying it to the glass? In the second place, even if it should require no spotting-out, it has to be mounted; but when the card is dry, I find that fine glass surface has, in a great measure, disappeared, so that the whole enamelling process goes for nothing. What we want is the means of applying the enamel to the mounted card when dry; but I find it nearly impossible to lay down the card on the prepared plate without air-bubbles being introduced. Perhaps some of your readers could furnish hints on this part of the process, and confer a great favour on at least one of the oldest subscribers to the News.

An Irish Photographer.

[The first time the formula for enamelling photographs with gelatine and collodion was published was in our pages in 1860. Subsequently it was published again in 1864, Mr. Tunny giving details of his own practice. Various formulæ, varying slightly in details, have appeared in our pages since, and thousands of photographs have been enamelled, and are constantly being enamelled, according to the instructions so given. If our correspondent fails where others succeed, he should not style the method useless. There is no difficulty if the instructions are followed with ordinary care and skill. Much of the high glaze may be lost in mounting if starch or paste be employed, but less if glue be used, and much of this can be recovered by subsequent rolling. But if our correspondent desires to retain the highest glaze, let him adopt one of the methods in which the enamel surface is applied after mounting. In regard to the question of touching-out, although sometimes inevitable, many photographers lay their account for producing, as far as possible, pictures without spots. But, in any case, enamelling after mounting will meet the difficulty. If any of our readers can offer additional hints which may help our correspondent, we shall be glad.—Ed.]

Proceedings of Societies.

French Photographic Society.

A meeting of the Society was held on the 1st inst., M. Balard, president, in the chair.

M. Garcin presented the Society with a collection of pictures taken by means of his panoramic apparatus.

M. Goupil exhibited some specimens of the photoglyptique (Woodbury) process, landscapes and paintings.

M. Ferrier showed some proofs obtained by means of bichromated gelatine. In his method of transferring, he did not coagulate the albuminized surface by means of alcohol, but by the use of nitrate of silver. He likewise modified the bichromate of ammonia solution by the addition of a little carbonate of ammonia, which had the effect of rendering the bichromate more soluble, although, perhaps, the sensitiveness of the mixture was slightly impaired.

M. Warren de la Rue presented the Society with his recent work on solar physics.

M. Dussol described a new dry-plate process, based upon the employment of an infusion of fir cones (see p. 199).

A new description of camera, designed by M. Silvy, was exhibited, the novelty of which was the use of a photographic cartridge containing a roll of waxed sensitized paper. This paper was rolled and unrolled in the field of the camera by means of two screens and cylinders, a movable tape measure being fixed outside, which travelled with the paper, and indicated the extent to which the screws should be turned when a fresh supply of sensitized material was required.

Several members disputed the novelty of the apparatus, which bore a similarity to one constructed some time since by M. Relandin.

M. Romain Talbot showed an enlarging apparatus, in which a magnesia cylinder was used; the oxygen employed was produced, stored up, and compressed in the instrument without recourse being had to india-rubber bags and tubes.

The Marquis of Maison forwarded some enlargements, and likewise a note of the manner in which they were produced (see p. 200). He likewise exhibited a photograph upon ivory prepared by a process previously described by him.

M. Humbert de Molard addressed a communication to the Society relative to a recent paper of M. Montagna, in which that gentleman describes a novel method of taking portraits with various backgrounds. The principal point in the method was the reflection upon a screen, against which the sitter was posed, of an enlarged view, and this was photographed at the same time as the portrait was taken. M. Humbert de Molard stated that for ten years he had exerted himself to obtain a fair trial for this mode of working in one of the largest Parisian studios, but the cost and fear of difficulties had been fatal to his exertions. He did not wish to dispute with M. Montagna the claim of priority, as in this, as in many other matters, the same idea had occurred to both simultaneously. The arrangements for carrying out the manipulations still require to be perfected.

M. Barkanof submitted a collection of views taken in the Caucasus, produced at and around Koutais in that district.

In reference to a statement in M. Barkanof's letter, M. Davanne informed the Society that he was at present engaged in investigating the action of ammonia upon negatives intensified by the aid of chlorine or iodine compounds. It is a well-known fact that *cliches* of this kind become changed by time, and are thus rendered useless for printing, and M. Davanne believes that the application of some body capable of absorbing the excess of iodine or chlorine would remedy the difficulty.

M. Fox Talbot forwarded several specimens of heliographic engraving, and promised a description of the process for a coming meeting of the Society; he states that he still follows the same general principles made known in his first publication on the subject.

MM. Lefman and Lourdel described a process of heliographic engraving, and forwarded specimen proofs of the same.

M. Gaume addressed a communication on the subject of preparing transparent *cliches* for carbon printing, to compete for the medal to be given by the Society in April next.

MM. **Maquet, Davanne,** and **Jeanrenaud** exhibited some of their first results made to obtain a pattern or design upon paper by means of gelatine reliefs.

M. **Marion** stated that he had produced a grain by means of pellicle *cliches*, of which he presented specimens to the Society in January last, informing the members at the time that he had prosecuted researches similar to those undertaken by Mr. Woodbury, who visited his studio at Courbevoie to inspect the results.

M. **Gobert** remembered that in 1867 and 1868 Mr. Bingham had, in conjunction with Mr. Woodbury, produced something very similar to that shown by MM. Maquet, Davanne, and Jeanrenaud, and he believed that the modification had been secured by patent.

M. **Davanne** regretted that nothing had been published in regard to these improvements. His colleagues and himself merely wished to make the modification public.[*]

M. **Jeanrenaud** described a method for transferring and reversing negatives. He softens the *cliche* in a dilute solution of hydrochloric acid, and, when dry, coats it again with collodion containing a proportion of glycerine; it is then placed downwards upon a plate upon which a solution of gelatine is placed, to which, on drying, the film bearing the image adheres.

The proceedings then terminated.

Talk in the Studio.

The Rise and Progress of Photography.—On Thursday evening week, Mr. Nelson K. Cherrill delivered a lecture on this subject at the Royal Sussex Assembly Room, Tunbridge Wells. The chair was occupied by the Rev. Joseph Ridgeway, M.A. A local paper says:—"The lecturer gave a lucid description of the early discoveries made in the science of photography, and traced the different discoveries through their several stages, each stage being illustrated by pictures, and more than one of these, owing to their originality, were objects of particular interest. The camera of the present day was described, and also the principle on which it was constructed. In the course of the evening, a photograph was taken by means of the magnesium light, and the audience was by no means sparing in its applause, as the picture gradually developed itself on what originally appeared to be a plain sheet of paper. A number of beautiful dissolving views were introduced, and the many purposes to which photography might be applied fully illustrated and explained. In concluding his remarks, the lecturer stated that in his opinion, although much more might be accomplished by photography, he did not think they would ever be able to take a picture with the different varieties of colour, and he grounded this assertion on the fact that it would be impossible to prepare a plate for such a purpose. It was announced that the profits derived from the lecture would be devoted to a fund for the advancement of art education amongst the members of the Church Institute."

Practical Hints.—No. 2. **Oxy-hydrogen Light.**—*Simple Precaution against Explosions from Unequal Pressure.*—Discard safety (?) valves. Procure a piece of glass tubing, say three feet long, and bend up about a foot in a syphon shape. Fix the longer arm upright, and fill with water to within an inch of the end of the shorter arm, to which attach the tubing from the *larger* bag (if they vary in size), which has been sufficiently weighted. Turn on the tap slowly, and stick a strip of paper on the tube to mark the height to which the water rises. Then attach the other bag, and weight it until the same level is obtained.—B. L. S.

New Magnesia Burner.—During a visit which we lately made to the works of the New York Oxygen Gas Co., 547, West 41st Street, we saw a new burner in operation which has just been received from France, and which successfully meets the difficulty previously found in burning the oxygen light, with a very low pressure on the "burning gas." Each elementary burner consists of three very minute jets, two at either side coming somewhat towards each other, which are supplied with the ordinary gas, and the other between them, and a little shorter, which is fed with oxygen. By this means, no matter how low the pressure on the illuminating gas may be, no retreat of the flame into the jet can occur. We saw this burner, in fact, operating most excellently with a pressure of about 2-10th inch of water. We hear from Mr. C. H. Stoddard that a yet further improvement is announced, of which specimens will soon be on hand.—*Professor Morton in Journal of Franklin Institute.*

Yellow the Brightest Colour.—Experiments made to ascertain what colours are most quickly and easily perceived by the eye seem to show that bright yellow is the colour most easily distinguished, and is therefore suggested for railway signals.

The Solar Temperature.—A paper published by Padre Secchi, in *Les Mondes*, states that the temperature of the sun undoubtedly reaches many millions of degrees, though the means of estimating it are imperfect. This high degree of heat may have been caused by the force of gravitation, which has united the elements of which the central point of our solar system has been made up; the initial temperature, therefore, the result of mechanical action, will, of necessity, have been greater than the present temperature of the sun is, which is certainly cooling down. But whatever this loss of heat may be, it is imperceptible to us, as it is slowly taking place, and partly compensated by chemical actions which take place in the sun, which is most probably in its interior a mass of strongly compressed and condensed nebulous matter.

Silver.—The tenacity of silver has been studied by Matthiesen, and can be stated for comparison as follows:—Alloy of tin and copper, 1; gold, 3·6 to 4·3; copper, 4·3; silver, 7·2; platinum, 7·2; iron, 13; steel, 30. It is so ductile that a grain of it can be drawn out 400 feet, and it can be hammered into leaves so thin that it would require 100,000 of them to make a pile an inch in height. Its conductivity for heat is to copper in the ratio of 100 to 73·6; and for electricity, as 1,000 to 954. Cast silver expands, according to Calvert, between 0° and 100° per cent., 0·001991; and its specific heat is 0·05701. Although silver conducts heat remarkably well, its power of radiation is very small, so that a silver vessel retains the heat of a liquid contained in it longer than any other metal. Pure silver, if highly heated in oxygen, will absorb 6·15 to 7·47 volumes of that gas, and, under the same circumstances, will take up 0·907 to 0·938 volumes of hydrogen, 0·486 to 0·545 carbonic acid, and 0·15 carbonic oxide—in this property differing considerably from palladium.

Platinizing Metals.—Professor Bottger, after many experiments, recommends the following bath for this purpose which may be made of any strength that is desired, and will keep a long time:—Into a solution of chloride of platinum, carbonate of soda in fine powder is gradually thrown in small quantities, until small bubbles of carbonic acid gas make their appearance. A small quantity of starch sugar is then dissolved in the mixture, and afterwards as much sea-salt as is necessary, in order that the deposited metal may not be of a dark tint, but, on the contrary, may be bright. In order to platinize small articles, they are placed in a zinc vessel pierced with holes, which is plunged in the bath, heated to about 60° C. They are taken out at the end of a few minutes, washed in water, and dried in sawdust.—*Dingler's Polytechnic Journal.*

Molecular Movement.—Professor W. Stanley Jevons read a paper before the Philosophical Society of Manchester, on the "so-called molecular movement of microscopic particles." After alluding to the discovery of the minute particles of inorganised matter suspended in water, by Robert Brown in the year 1827, Mr. Jevons states that the purest distilled water alone gave the movement of the minute particles in the greatest perfection, while the presence of acids and alkalies that checked the motion of the particles under the microscope were found also to have a power that has not been sufficiently noticed, of precipitating the suspended matter. The author was convinced that the motion was really due to electricity. The molecular motion is arrested by acids and alkalies, ammonia excepted, because their presence renders water a good conductor. The action of ammonia on the conductivity of water being exceptional, Mr. Jevons employed this reagent as an *experimentum*

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[*] Details of Mr. Woodbury's results in this direction were published in the Photographic News three years ago (see article on p. 193).

crucis, when he found that it had an almost inappreciable effect in stopping microscopical movement, neither did it cause a precipitation of the suspended matter.—*Academy*.

To Correspondents.

Permanganate.—We do not know of any one who can supply specimens of the large size you require. Try Marion and Co. 2. It is quite impossible to state how much permanganate will be required to purify any given quantity of bath solution, as it depends entirely upon an unknown fact, namely, the quantity of organic impurity present. The proper plan is to add very little at a time, and try.

In Need of Help.—Streaks in the direction of the dip may result from a variety of causes. A floating film of greasy or metallic-looking scum on the surface of the bath is not an uncommon cause. This may be easily seen and easily removed. If it is present, draw strips of clean blotting-paper over the surface of the bath until the scum is removed. If this do not remove the streaks, neutralize and sun your bath again. Allowing the film to be well set before immersing the plate will sometimes check a tendency to streaks. Keeping the plate in motion alternately laterally and vertically all the time it is in the bath, commencing immediately on immersion, is generally a certain cure.

C. R. Lobb.—You somewhat mistake the relation between a journal and advertisers in its pages. As a rule, we believe that all the advertisers in our pages are respectable, and we should not knowingly insert announcements by which our readers could be wronged or injured; but no journalist can assume responsibility in regard to advertisements whatever in his pages. It would more than occupy all one person's time to attempt to guage the trustworthiness of advertisements, were he anxious to undertake such a task. If a tradesman receive your money, and fail to supply the goods for which the money was remitted, a solicitor will, we have no doubt, advise you as to the best remedy. We regret that we cannot help you, as we have no time for personal action in such matters. The question of "exposure" unfortunately involves considerations which are governed by the law of libel, to which a journalist becomes amenable if he publish statements with the intention or tendency to injure the business of any one.

H. C.—As a rule, we have found carbon prints quite as sharp as silver prints, but we can conceive cases in which a very slight loss of sharpness might result from carbon printing. If, for instance, the layer of gelatine was thick, and the proportion of colour small, the depth of the layer necessary to form the image might militate against perfect sharpness. We have heard of cases in which drying the carbon print by heat has made the gelatinous image run a little, and so interfere with sharpness; but a good carbon print should be as sharp as a silver print. Floating carefully and not too long materially aids in quick drying. We have reason to believe that the new pigmented paper will remove many troubles as to drying and keeping it in a sensitive condition. With the old tissue, however, a little care and a little experience remove many difficulties. We recently sensitized some samples of the old tissue, of various qualities, floating for two minutes on a ten per cent. solution of bichromate, and hanging up to dry. In two hours we were able to expose a portion; we tried it next day, and found it equally good, and on the third day, and still found it good. Although we used different negatives, and guessed the time, we got a good print from each piece exposed.

W. J. A. G.—The solution of wax and stearine is to be rubbed on the plate with a tuft of cotton wool, rubbing it so as to leave an almost imperceptible layer. The solution should always be in a liquid condition. From your description you are not using quite the best preparation. Wax is not soluble in alcohol; the alcoholic solution used contains stearine, not wax. The preparation which Mr. Johnson generally uses and recommends is a solution of wax and resin in turpentine. About three drachms of each are dissolved in a pint of turpentine, sometimes more wax and less resin. 2. Float the tissue from two to three minutes. The shorter the floating the less sensitive the tissue, the quicker it will dry, and the better it will keep. 3. See answer above. 4. The treatment in the final transfer entirely depends on the preparation of the transfer paper. That at present used by the Autotype Company is immersed for a time in very hot water, then applied to the print, rubbed down with the squeegee, and left to dry. 5. As a rule, the diminution of the quantity of the solution will regulate the number of sheets to be floated. It is probable that, like a silver solution, it will become somewhat weaker, but at present we have no data for stating the ratio. 6. Nothing can be finer for transparencies.

Fred.—The lens would be well suited to such a camera, but some additional means of extension will be necessary. If the back solar focus of the lens be seven and a-half inches, you will often require the camera to extend to eight or nine inches for ordinary work, for the closer the object the greater the extension of the camera necessary. The best plan will be to have a wooden cone for the front of the camera, made of about two or three inches deep.

Williams.—Development by dipping in a solution of iron may be employed by those who have a difficulty in covering the plate with one sweep of the developer. The plan has its disadvantages, however, and in choosing which plan to adopt the beginner has a choice of evils. The disadvantage of dipping is two-fold: in the first place, all the free nitrate on the plate is swept off and diluted by the whole quantity of iron solution, and as the free silver is generally necessary to give intensity, it often happens that it is difficult to get sufficient intensity by the dipping development. The second disadvantage arises from the fact that the condition of the developing bath is changed with every plate immersed, as silver accumulates and the iron is gradually exhausted. The result will be apparent: gradual under-exposure and increase in intensity in the plates. On the other hand, it is desirable to master the manipulation of covering the plate by one sweep of the solution. Time and practice will bring this. The use of sugar in the iron solution is a great aid in securing an even wave. The development is much more under control when the pouring method is used.

Magna Charta.—The negatives are much under-exposed. 2. The printing and toning of examples enclosed are pretty good. 3. The reason that the child's legs and feet are not seen is the under-exposure and imperfect lighting. The light is directly in front of the sitter, and thus tends to give a flat picture without modelling. 4. With better lighting and fuller exposure the collodion you are using will give better results; but it will be improved by the addition of half a grain of bromide of cadmium to each ounce. 5. The want of opacity in the film is probably due to the collodion being new and thin. The addition of a little more soluble cotton, half a grain or a grain per ounce, would improve it. It will probably improve by age. 6. After washing out your bath, rinse with distilled water, and leave it to drain without drying.

Venator.—The darkness in the faces to which we referred was due to two or three causes: partly under-exposure, and partly under-development. It is probable that Mr. Blanchard will give lessons. It will be obvious to you that, whilst in this column we are glad to aid in solving special difficulties indicating special faults, or suggestiug special improvements, we could scarcely enter into minute analysis of the work of all our correspondents.

W. C. G., M.D.—There are articles on printing and toning in all our Year-Books, but none of more especial character than the rest in 1869. The price of the Year-Book is one shilling, and the postage two pence.

Arthur Taylor.—Received. Thanks. We should be glad to learn some particulars of the method employed.

Baynham Jones.—The trouble is a perplexing one, for which we know no remedy but a change of collodion. The thickening of the film, such as you describe, has, in our experience, proceeded from two or three causes; namely, the use of collodion containing excess of ether; containing too much water; or made with a soluble cotton of a somewhat tough character, setting too readily. The latter is the most frequent cause. Age will improve the collodion, or agitating it with a little carbonate of soda; but this sometimes entails another series of fogging troubles. We should try another collodion, or a mixture.

Omega.—It is possible to intensify with pyro and silver after the application of sulphide of potassium, but there is risk of stains in the successive application of different processes in this way. A better plan will be, where necessary, to intensify with pyro and silver first, and then apply sulphide of potassium, if it is necessary, to obtain more printing vigour. 2. The amount of silver abstracted by each plate of a given size from the nitrate bath depends upon a variety of things, without a knowledge of which it is impossible to state it even approximately. It depends upon the salts used in the collodion, on the quantity of these salts, and on the thickness of the collodion. With a thick collodion, twice as much will be used in coating a plate as with a thin collodion, and some samples contain nearly twice as much of the iodides and bromides as others. As a very rough approximation indeed, liable to much modification, you may calculate that each grain of salts in the collodion will decompose a grain of nitrate of silver.

Kent.—We should erect the booth so as to stand east and west, having the chief portion of the north side open for light, and about half the north roof.

D. Welch.—In our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
Details of "Lichtdruck" Processes ... 205
Photographs of Criminals ... 206
Observation of the Next Solar Eclipse ... 206
One of the Very Best of Dry-Plate Processes ... 207
Tinted Albuminized Paper ... 208
American Studios ... 208
American Correspondence ... 209
Infusion of Quassia as Applied to the Production of Dry Plates. By John N. Sleddon ... 210
On a Method of Obtaining Natural Clouds on Landscape Pictures. By Adolf Hubner ... 210
Something New on Silvering Paper ... 211

PAGE
Peeling of the Film. By H. T. Anthony ... 211
On the Mounting of Prints, and the Chemistry of Mounting Materials. By V. G. Bloede, Chemist ... 211
On the Production of Negatives by the Carbon Process. By Leon Vidal ... 212
Correspondence.—Studio and Lighting—Manipulations in Carbon Printing—Enamelling Card Pictures—A Few Words about Carbon Printing ... 213
Proceedings of Societies.—Liverpool Amateur Photographic Association—Bristol Photographic Society ... 214
Talk in the Studio ... 215
To Correspondents ... 216

DETAILS OF "LICHTDRUCK" PROCESSES.

A SHORT pamphlet, containing but half-a-dozen chapters, descriptive of photo-mechanical processes, and more especially of the Alberttype and Lichtdruck, has just been published in Leipsic, by M. E. Leontytsch, at the somewhat exorbitant charge of fifteen shillings. The title of the work is "Photolithographischer Druck," and it is stated to contain the details of all that is at present known in regard to mechanical printing. Dr. Liesegang, in a review in the *Archiv*, does not appear to believe altogether in the infallibility of the author's writings, but, nevertheless, he gives some copious extracts from the work in question.

The first chapter treats of the character of the negative, the essential points to be considered being full detail in the shadows, but slight intensification, and the employment of patent plate. In Chapter II. directions are given for the taking of the negative on the reverse side of the plate.

In the succeeding chapter the question of the printing block is discussed; it should be of patent plate, a quarter of an inch thick, perfectly square and even, and with a polished surface. This is the main point of difference between the Albert and Lichtdruck processes: in the former a polished plate is employed, in the latter a ground surface.

The plate is well cleaned, and coated, in the first instance, with a chrome-gelatine mixture, which serves as an intermediate layer between the glass and the sensitive film. This mixture is made by blending together two liquids, compounded as follows:—

No. 1.—Water	...	80 parts
Good dry glue	...	10 „
No. 2.—Water	...	40 „
Powdered bichromate of potash		3 „

Both liquids are heated separately to ensure perfect solution, and then mixed together, being again warmed and filtered through cotton wool immediately before use. The plate is also slightly warmed before coating, the solution being poured upon the level surface, and spread out by means of a glass rod. As the plate must be dried by heat, and the film should be at least one line in thickness, it is well to place a supply of plates upon a suitable oven (having a perfectly flat surface, and well shielded from dust), and to coat them with the solution then and there. Five or six hours at a temperature of 25° to 30° Reaumur will dry the plates sufficiently, and they are then covered with a board faced with black cloth, and exposed to the action of light for a quarter or half an hour until a light brown tint is produced. It is well to cover up one corner of the plate, to serve as a guide to show how far the action of the light has proceeded. This operation has the effect of cementing the film to the glass, but care must be taken not to carry it so far as to render the upper surface of the gelatine perfectly insoluble.

The plate is now put into a water bath, which removes the soluble chromate, and should leave the film of an almost colourless tint. It is then placed upon filter paper to dry spontaneously, and thus render it fit to receive the second coating. This latter consists of gelatine, white of egg, and bichromate of potash, eight grammes of gelatine being dissolved in a hundred of distilled water, and three grammes of bichromate in another quantity of forty grammes. To the gelatine solution is added sixty grammes of white of egg, and, after being heated over a spirit flame to 40° to 50° Reaumur, the bichromate solution, likewise warm, is mixed in, and the whole filtered through cotton wool. The compound is applied in a warm condition to the plate in the same way and with the same precautions as the first solution, the film, however, being only half as thick, and the oven heated to but 20° Reaumur.

The printing may be conducted in an ordinary frame, diffused light being employed for the purpose. The negative should be inspected through the back of the frame in the first place, when only the more prominent outlines will be visible, and the action of light has then gone sufficiently far when every detail in the opaque parts becomes visible. Taken from the frame, the plate now undergoes an operation upon which the whole secret of success is based, and without which it is impossible to produce a serviceable block: it is placed, namely, upside down, upon the cloth-faced board before mentioned, and exposed again to light from the reversed side until the highest lights only remain distinguishable. This has the effect of hardening the film throughout, and rendering it firmer and less absorbent of water. Finally, the plate is washed, by candle-light, in a water bath, to remove any soluble chromate, and placed to dry upon filter paper.

The dried plate, previously to rolling up, is placed for five minutes (face uppermost) in a shallow dish containing a 25 per cent. solution of glycerine in water; it is then fixed up with a suitable backing in a lithographic press, wiped over lightly with a soft sponge moistened with a few drops of linseed oil, and next with another slightly damped in water, after which it is rolled up carefully with an exceedingly soft roller, such as would be used for chalk drawings.

The printing is conducted in the ordinary manner, the paper used being dense and smooth, and not previously damped, as is the case in lithographic printing.

PHOTOGRAPHS OF CRIMINALS.

Nothing is so easy as fault-finding; and the less the objector knows of his subject the more easy it becomes to indulge in indiscriminating censure. It is scarcely in a ministerial print like the *Daily News*, however, that we look for captious and groundless objections to a judicious order of the Home Secretary. A few days ago it devoted a leader to the subject of photographing criminals for the purpose of identification, and regards the project as full of difficulties and destitute of practical value. Here are its remarks:—

> We see that the Middlesex magistrates have determined to carry out the request made by Mr. Bruce, and to furnish the Commissioners of Police with photographic portraits of all those offenders in our county prisons whose offences have brought them within the meaning of the first schedule of the Habitual Criminals Act. We sympathise with the object of this measure, but we greatly doubt its efficacy, and anticipate that there will be no small difficulty in carrying it into effect. Suppose a convict flatly refuses to be photographed—a difficulty which, it seems, has already occurred—what is to be done? Or, suppose he gives a feigned acquiescence—can he not so effectually distort his features as to render the likeness of no practical value? And, even if he submit with a really good grace, of what use will the photograph be? Criminal faces are almost all of one type. There is but little, if any, individuality about them. And the various photographic portraits which will compose the new criminal gallery will, we suspect, have so unusually strong a family likeness as to be of little or no practical value in establishing the identity of a prisoner. We confess that this proposal to collect photographic portraits of convicts seems to us a stroke of genius of much the same sort as was that to which we are indebted for the tin flags upon our cabs. The only argument in its favour is that it is an experiment which involves no cruelty to the prisoner, and which, if not so effective a means of ensuring identification as branding or cross-cupping, is certainly far more humane. It remains to be seen how far it will answer its purpose. There are, as a rule, about 7,000 convicts in the various convict prisons in England and Wales, to say nothing of the prisoners in the county gaols. Colonel Henderson will need a larger album even than that which was the other day presented to him; and to hunt through it for the portrait of any particular offender will be no easy task.

The simple answer to all this is furnished by the fact that the plan of photographing criminals has been in operation in several gaols for many years, and that it has been found eminently useful in identifying old offenders, and securing for them their due consideration in prolonged terms of confinement, which scarcely fledged criminals properly escape. "Criminal faces are all of one type; there is but little, if any, individuality about them," our contemporary remarks. This statement is clearly the result of inexperience or lack of information on the subject. In this respect the criminal classes are very much like other classes, and rarely present any special outward characteristics which separate them from the mass of the ill-educated, ill-fed, ill-clothed, but not criminal, portion of the community. In fiction, Bill Sykes, Fagin, and the Artful Dodger are strongly marked enough, and occasionally in fact; but how often is the skilful burglar a civil, well-spoken fellow, scarcely distinguishable in any way from a clever mechanic? A few dozen portraits of prisoners before us, taken at random, at once negative any notion of a common type prevailing amongst gaol-birds, except so far as a prevailing aspect of neglect and lack of culture, physical and mental, is more or less manifest in all. But they would not be selected as examples of a rogues' gallery, much less as members of one family. As for the difficulties of securing the likenesses, they exist, but are overcome without very much trouble; and the system generally is endorsed by a governor of a gaol who has practised it for many years as "inexpensive, effective, and wholly free from objection."

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OBSERVATION OF THE NEXT SOLAR ECLIPSE.

The next solar eclipse will take place on the 22nd of December next. It will be only partial in this country, the line of totality passing near the following places:—Odemira (in Portugal), Cadiz, Estepona (about twenty miles north of Gibraltar), Oran (on the Algerine coast), Syracuse, and the region including Mount Etna (in Sicily), the duration of totality being a little over two minutes. Our excellent contemporary, *Nature*, referring to the discussion on the subject at a recent meeting of the Astronomical Society, summarises a number of interesting facts on the subject, which we condense. It is not too early to give attention to the subject, and we may express a hope that, in relation to the photographic observations, some hints may be borrowed from the successful operations of our American friends, and that a repetition of the failure in India in 1868 may be avoided.

It is proposed, it seems, that an endeavour shall be made to equip two expeditions to observe the phenomena of the eclipse at two of these points, in order that, should adverse weather occur at one station, results may be, perhaps, obtained at the other. It is thought probable that the station of Oran, in Algeria, will be occupied by a French party of astronomers. The choice for English observers seems to be between Cadiz, Gibraltar, and Syracuse. Both Admiral Ommaney and Lieut. Browne, R.A., spoke, from personal experience, favourably of the climate of Gibraltar at that time of the year. At the Astronomical Society the general opinion was that both parties ought to be equipped for the following main objects:—1, Photography; 2, Spectrometry; 3, Polarisation. Other objects of subsidiary importance, as photometry and meteorology, would also receive due attention. An approximate estimate of personal and instrumental force gives from twenty to twenty-five skilled observers, and about ten telescopes of from four to six inches aperture, as the complement necessary for *each* of the two expeditions. The council of the Society propose to invite, by circular and other means, those prepared to volunteer for this service to send in their names at once, specifying the particular class of observation which the observer desires to be engaged in. The number of actually available telescopes and instruments will also be ascertained. When this preliminary information has been acquired, the Society will consider whether they should apply to Government for such assistance as may enable them to utilise, with the utmost advantage, their own resources.

The systematic examination of the solar surface is, *Nature* observes, "emphatically a modern study, which has, even during the last twelve months, advanced with enormous strides. Until recently these researches were limited to the ocular inspection and photographic representation of features rendered visible at ordinary times by our improved telescopic power, and to similar modes of examining certain other features developed during eclipses. Subsequently, with the wonderful aid afforded by the spectroscope, a new class of phenomena was brought under examination, but only momentarily, on the rare occasions of total solar eclipses. Only last year, M. Janssen and Mr. Lockyer, labouring independently, showed that many of the spectroscopic observations, for securing which an eclipse had been believed to be indispensable, could be made without the aid of that phenomenon—a discovery second, in dignity and value, to none that this age has achieved. But these very methods have opened out inquiries and doubts which again require for their solution the peculiar circumstances attending total obscuration of the sun's disc.

"For instance, the corona which has been seen at times to extend to a distance beyond the sun greater even than the sun's diameter, has been very generally stated to indicate a solar atmosphere, a conclusion not entirely borne out, however, by the spectroscopic method of investigation; and Dr. Frankland and Mr. Lockyer have stated their opinion that the *whole* of the corona can hardly be solar, this opinion being based partly on their approximate determination of the pressure in these regions. This question was manfully attacked during the eclipse observed last year in America, but the results, which will be found most carefully detailed in the report printed by the American Government, were not conclusive.

"Again, it has been shown that the solar chromosphere is not entirely seen by the new method of observation; away from the sun its light is ordinarily so feeble that it cannot be detected through our brighter atmosphere, but during eclipses it is seen; and in this matter the American astronomers did admirable work, which, however, requires strengthening, for many still hold that the radiance depicted on the photographic plates immediately round the moon in the photographs is not the chromosphere, as stated by Dr. Gould and others, although there are very many arguments which can be brought forward in favour of their idea that it is that envelope. Other points might easily be brought forward to show the extreme and, in fact, special importance of eclipse observations at the present time.

"If researches such as these yielded no fruits beyond the satisfaction of our craving desire to know more of the structure and constitution of the sun, they would still be prosecuted with ardour. But the knowledge they are calculated to advance has a much wider range and a more tangible character than the gratification of philosophical curiosity. Sabine, Lamont, and Wolf, many years ago detected the contemporaneity of magnetic disturbances and the maximum outbreak of spots on the sun's surface. More recently, De la Rue, Stuart, and Loewy have established a relation between the sun spot maxima and the configuration of the planets Venus and Jupiter. Systematic observations have been carried on at the Kew Observatory continuously for nine years for the express purpose of throwing light on the apparent connection of the sun spots with magnetic and planetary phenomena. During this period upwards of nine thousand photographic pictures of the solar disc have been taken. These researches, and those of Carrington, extending over many years, have shown that, though the spots, if observed from day to day and month to month, appear to break out capriciously both in point of size and position, yet when observed perseveringly for a series of years, a recurrence of phenomena, so far at least as the total area covered by spots is concerned, becomes evident. The period required to complete this cycle is variously estimated, a little over eleven years being that most generally accepted. On Thursday last, a remarkable paper by Prof. Piazzi Smyth, director of the Royal Observatory, Edinburgh, was read at the Royal Society, in which the results given by thermometers buried at different depths in the earth, and observed for upwards of thirty years, were tabulated and discussed. The main deduction from these observations was, that the temperature of the earth, divested of the effects of transient atmospheric changes, seemed subject to a secular law. This secular variation in the earth's temperature may of course be due to secular changes going on deep in the structure of the globe itself; but it may be ascribed, also, and with a far higher degree of probability, to changes in the heat-supplying power of the sun.

"There is one extremely important fact connected with these changes, namely, that one of them is accomplished in $11\frac{1}{10}$ years; that is, exactly in the sun spot periods as determined by Wolf, and identical, or nearly so, with the period obtained from the Kew observations.

"But the spots are only one of the known evidences of changeful activity going on in the great central luminary. The form, disposition, and dimensions of the prominences and the distribution of the chromosphere are visibly undergoing constant alteration. May these phenomena not also have their period of recurrence? And may not they, equally with the spot outbreaks, stand in some relation to what formerly used to be considered purely terrestrial phenomena, namely, magnetism, electricity, humidity, temperature, and rainfall? To carry the hypothesis one step further: if there is a physical relation between the solar changes and meteorological occurrences, and if the solar changes are subject to laws which cause them to recur in regular series, have we not in this secular arrangement a clue by means of which climatic variations may be studied with greatly increased effect? Is not, in short, the systematic study of solar phenomena extremely important from a meteorological point of view?

"If this hypothesis, which is one daily gaining strength, be but probably sound, the careful observation of the physical phenomena of solar eclipses becomes an urgent necessity, as calculated not only to afford more just and more noble views of the constitution of the universe, but to confer on mankind the same power with respect to climatal vicissitudes which we already possess with respect to astronomical phenomena, the power of confident prediction, which will never be ours until we have a firm grasp of the secular laws by which those vicissitudes are governed.

"If these views be generally accepted, as we know they will be by those acquainted with the subject, we need not fear that anything which the knowledge and devotion of our astronomical physicists, or the power of the Government, can supply, will be wanting to effect the due observation of the solar eclipse of December in a manner creditable to our age and our country."

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ONE OF THE VERY BEST OF DRY-PLATE PROCESSES.

A correspondent of the *Bulletin* says:—"Herewith I enclose a formula for dry plates which was worked out and perfected by one of the very best photographers in England (now deceased). I call it the Glover Dry-Plate Process, and it certainly gives the best keeping plate I have ever made, making a very soft negative full of detail. I have now in my possession some plates prepared over four years ago, which show no signs of deterioration. This formula has never been much used in the United States, and will prove interesting to those who work by the dry process.

"The plates are prepared by running round the edges, when cleaned, a thin solution of rubber for a width of one quarter of an inch, or by coating with a solution of albumen, white of one egg to twenty ounces water. When ready, coat them with any good bromo-iodized collodion, and immerse in a bath forty to forty-five grains strong, and slightly acid (I prefer to use nitric acid). When thoroughly coated, wash off all the free silver, and immerse again in a solution of bromide of cadmium ten grains to the ounce of water. This can be done in a dish or bath. Allow the plate to remain in the solution while coating and immersing the the next plate in the silver bath. Then take it from the cadmium solution, and wash well under a tap; then flow over the preservative, and drain off; flow on again, and work well all over the plate for twenty or thirty seconds; then wash off under the tap, and set aside to dry spontaneously.

"The plate can be developed by any of the usual means for dry-plate work.

"The preservative is compounded, in equal parts, of two solutions, each of which should be kept separate, and mixed only during the preparation of the plates.

Solution No. 1.

White of one egg...	
Water	5 ounces
Ammonia	6 or 8 drops

Beat well up to a froth; let it settle, and filter.

Solution No. 2.

Tannin	12 grains
Honey	3 ,,
Distilled water	1 ounce

After filtering, add three or four drops of alcohol."

TINTED ALBUMINIZED PAPER.

Tinted albuminized papers, such as are not unfrequently employed by German photographers, may be prepared in a very simple manner. Very dilute solutions of aniline colours in alcohol will furnish tints of almost every shade, but their application imparts to the albuminized surface a matt appearance, which, though frequently artistic, is not always desired. In the *Annuaire Photographique* for 1870 M. Davanne gives some directions by means of which operators may tint their own material, either on a large or small scale, and thus give more variety to their prints than can otherwise be obtained on white paper only.

Two solutions are prepared of the following proportions:—

No. 1.—Madder	... ...	6·50 grammes
Alum	... ...	3·25 „
Water	... ...	1000 cub. cents.

The above is boiled for the space of a quarter of an hour, well shaken, and filtered.

No. 2.—Aniline brown	... ...	8·50 grammes
Hot water	... ...	1000 cub. cents.

When the solutions have been cooled and become clear, the prints are passed first into No. 1, carefully washed, and then into No. 2. According to the time during which the photographs remain in the respective baths, so will the tints they assume vary: a long period ensuring a dark tint, and a short time one less pronounced.

Very rich tints may likewise be produced by employing one solution only, compounded as under:—

Madder	... ...	4 grammes
Powdered alum	... ...	2 „
Chalk	... ...	0·50 „
Water	... ...	1000 cub. cents.

The above is boiled, and then filtered, the paper being steeped in the liquid while in a warm condition.

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AMERICAN STUDIOS.

Messrs. Gurney and Son's Studio, New York.

One of the oldest photographic names in the United States is that of Mr. Gurney, who was one of the earliest professional portraitists connected with the art, his Daguerreotype experiences dating from 1840. We remember visiting his gallery in Broadway about eighteen years ago, where we saw some of the most perfect Daguerreotypes ever produced. The establishment recently opened by Gurney and Son is in the Fifth Avenue, New York, which may be described as bearing the same relation to Broadway that Eaton Square does to Regent Street. The new studio is described by our American contemporary as one of the most extensive and magnificent in the world. We condense details from our Philadelphia contemporary.

The establishment occupies three floors, covering an area of 80 feet by 37 feet, divided into the various rooms required for an extensive business. There are two glass-rooms, each 30 feet by 18 feet; one of these receives its dominant light, roof and side, from the north, the other from the south. The two rooms adjoin each other.

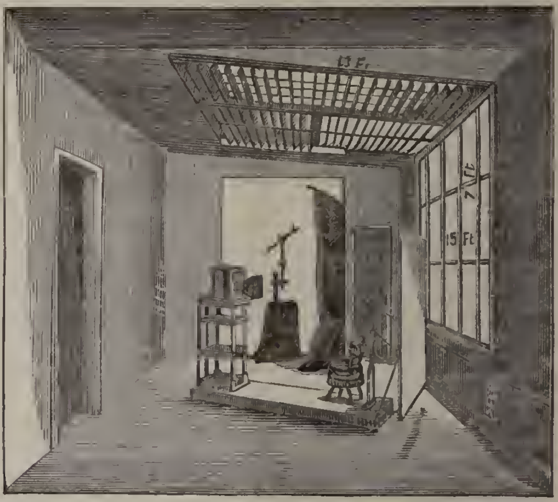
Entering the establishment from the street, the visitor ascends the stairs and enters the reception room, 37 feet by 40 feet, and 18 feet high, and lighted by five large windows. The walls, furnished with maroon draperies, are hung with specimens of all classes. Here, also, is the counter for the issuing of tickets, selling pictures of celebrities, delivering parcels, and the transaction of general preliminary business. At one corner of the room is draped closely a cosy little room, lit from the top, used for the exhibition of paintings and chromos, publishing the latter being a branch of the business. The whole room, were it not for the buzzing and bartering, over the counter in the corner, between the busy clerks and anxious patrons, would seem more like the private parlour of an art connoisseur than a photographic art gallery.

There are, of course, toilet rooms, waiting rooms, stock rooms, and work rooms of all kinds. A retiring room is devoted to the use of visitors while waiting their sitting and the result of their engagement, for they are never allowed to depart until satisfactory negatives are secured of them.

In the artists' rooms are three artists, for pastel, india-ink, and crayon work. In the chemical room the baths, collodion, &c., are prepared; baths boiled, &c. Above, on the roof or top of the house, is the printing room, 26 feet by 24 feet, where five printers are constantly engaged. The dark rooms are cleanly and light, and have all the modern conveniences.

The best of everything is furnished to the employés in instruments, apparatus, and materials, and as one of the operators proudly whispered to our Philadelphia contemporary, "The establishment is conducted by gentlemen with ability to direct, and character to harmonize every feature of the business, with a liberal appreciation of what each employé is worth, and give sufficient encouragement to all to cause him or her to do their best." Their large business, continually on the increase, shows the wisdom of their policy.

Of one of these (the north) we give a drawing below.



We enter the south light by the stairs from the floor below. It is 18 feet wide by 30 feet deep, and both side and top light are fitted with ribbed glass. The top light is 15 feet by 13 feet, and the side light 15 feet wide by 7 feet high, beginning 2½ feet from the floor. The highest point in the room is 11 feet 8 inches. So it will be seen that the inclination of the top is from the latter to 9½ feet, which is generally considered rather high for a quick working light. In this room the rustic effects are produced. On a platform 9 feet by 8 feet is the artificial shrubbery, foliage, &c., of a dark-grey tint; the head-rest, &c. This platform is on castors, so it may be moved around at will, to suit the light. Then there is abundance of the best lenses, double swing-back boxes, rustic fences, chairs, arbours, and other paraphernalia to make pictures.

Through a door 10 feet high—made so high that the backgrounds may be shifted through it—we enter the north light, which is all one could desire for good effects. The construction is exactly the same as we have described the south light to be, but its accoutrements are different. The light is controlled by spring-roller shades, inside. The most noticeable feature in this room is a movable platform, 11 by 14 feet in size, and 12 inches high (see the drawing), to which one of Wilson's head-rests is fastened permanently; and to one end a background, 6 feet by 5 feet. At the other end is a camera stand (also made fast) and box. The camera is suited for whole plate, imperial or cabinet, and card sizes, by substituting different sized lenses. The sitter is posed, and with great facility moved about under the light, until the best arrangement is secured. This can be done after the pose and focus are adjusted, too, and several effects of light may be tried, to choose from before making the exposure, or several effects got on the same plate. This is an admirable plan, and its advantages will be readily seen.

AMERICAN CORRESPONDENCE.

The Acquirement of Excellence by Mechanical Means—Some New Devices for Securing Better Results—A Useful Washing Tank—Photographing Criminals—Alcoholic Collodion as a Varnish for Negatives—Our National Exhibition.

The thoughtful reader must have been impressed often, during the past two years, with the fact that there has been a great deal of earnest effort put forth among photographers all over the world to secure better results. It is owing, I think, to the holding of such frequent exhibitions as have been held from time to time within the period named, in a great measure. The work of the few who have attracted the most attention and admiration has excited those who have been working along in their old rut, and the result has been new effort, renewed zeal, and good success. It is amusing, however, to see many endeavour to produce the best results without doing the necessary work. For example: in the matter of retouching the negative. Full instructions have been given how to do it, but the photographer who feels he has not the inherent skill to do it, or who is too much of a drone to exercise himself enough to do it, sets him to thinking how he shall accomplish it without going to the trouble of following instructions, or of making the necessary preliminary trials. As a result we have negatives on ground glass; the use of one negative over another; the interposition of a medium between the negative and the paper; reflectors; screens and printing-frames, contrived so as to hold the paper, when printing, at a little distance from the negative, &c. All this is done for the purpose of securing "that *soft* effect which characterizes retouched negatives." All this instead of sitting down at the retouching-table, and, by hard practice, working up to the real genuine effects. A great deal of labour is lost in this way, and a great many pictures delivered to the customer that are inferior. The true way, it seems to me, is to work at that plan which is known to be best until success is won; and success is generally pretty sure to reward faithful toil.

Some New Devices for Securing Better Results.—Among the devices I have spoken of are two or three I will describe. The first and most novel is a background just brought into use by one of our most talented photographers: Milbur Kurtz, N.Y. It is made of *papier mache*, and in shape is like the mouth of a funnel. It is about six feet wide, at the deepest part is about two feet back, and is coated inside with sand, made to adhere with size; it is fastened to a revolving stand, and the model is posed close up to or in it. The effects that may be obtained with such a device can readily be conceived. The most delicately gradated backgrounds may be secured, or they may be plain; exquisite roundness is given to the figure, and the contrivance is decidedly a great power in the hands of the photographer. It is a curious-looking affair in the studio, but is very manageable indeed, and does its work well.

Another device is a reflector, contrived by Mr. M. M. Griswold, which he finds very useful, and gives to the fraternity for what it is worth. It is made of planished tin; it is made round and concave, and is hammered into shape from one sheet; it is then mounted in a frame or sash, which raises and lowers in another frame the same as a window sash. It is made so that it can be quickly moved about, and adjusted so as to suit the different conditions of light. When the light is very bright, a thin gauze or lace is thrown over the reflector, to soften the effect, and some great successes are obtained by having this gauze of various colours—say pink, and blue, &c. Of course the colour is thrown upon the face of the model, and must be chosen to suit the subject in hand. The reflector is about thirty inches in diameter.

Another device is for a side screen, which is merely a frame with slots, such as are used in the top and side lights often. The novelty only consists in its portability, which is often useful.

The Berlin process you have now heard all about. I am sorry to say it does not grow in my estimation, though at times it is useful. Another method of accomplishing a similar end is to have a printing frame so made that the paper may be tightly held over the negative at a short distance from it during printing. By a pair of clamps and a little sub-frame this is easily obtainable, and the resulting prints are soft and mezzotint-like.

And while on the subject of printing, permit me to explain another little contrivance, which is used for printing on handkerchiefs, linen, watch-dials, &c. In printing on cloths the great trouble has been to get the cloth stretched tight and smooth. Messrs. Moore Brothers, Springfield, Mass., showed me their device a short time ago. They use any of the porcelain printing frames, which hold the negative fast on one side of the frame, and the plate on the other. Through one side a hole, say two inches in diameter, is bored; the cloth is then stretched over the end of a smooth cork that tapers a little, and pushed up through the hole. Thus, you see, the cloth is held there tightly, and presents an even surface to the negative for printing upon. Moore Brothers showed me another ingenious device, which they find very useful indeed in making pictures of children. We all know that if the attention of the child can be attracted for a few seconds it is all we want; the thing is, how to attract it. Messrs. Moore never fail with their method. It is no more nor less than a Poll Parrot. Just as the exposure is to be made, Polly is held up to the view of the child, and the removing of the lens cap being the signal, she raises herself and flaps her wings until the cap is replaced. Thus the child is attracted, and a good negative and natural expression are secured. This Polly has made all the children's pictures there for seven years.

A Useful Washing Tank.—A correspondent has sent me a drawing of a washing tank which he recommends very highly, and which is, doubtless, excellent. It is of the usual form, and is best round. The water enters near the top, the pipe being so arranged as to force the water against the side of the tank, and thus keep it in motion; when the tank is too full, it is emptied by the usual syphon. The main novelty is in the use of a thick layer of white pebbles in the bottom, instead of the usual perforated bottom or netting. It is guaranteed to be the most cleanly thing to use, and will never cause hypo stains, as do the netting and perforated bottoms very frequently. Mr. Bookhout is the gentleman to whom I am indebted for this idea.

Photographing Criminals.—It will be a good thing for photography if the plan you mention of photographing criminals is adopted by your officials generally. Both photography and the public would be greatly benefited. The plan has worked well in this country for many years. Each principal police station has its "rogues' gallery," and a visit to one or any of them gives one much to study and think about. There are not really so many *bad looking* faces in such a collection as one often meets in walking half a mile in a crowded street. There is a sort of a *sadness* rather than a look of wickedness about many of them. Of course, the same difficulties are met here in securing them that you described in the News, but the photographer generally triumphs in the end. I have understood that the rogues have conceived a plan by which they may establish a "detectives' gallery" also. This would be a good thing too, both for photography and for the rogues. Probably a good plan would be for the two departments *to exchange!*

Alcoholic Collodion as a Varnish for Negatives.—Mr.

E. K. Hough, New York, has sent me a very interesting communication on the advantages of a collodion with alcohol in excess for a negative varnish. In 1857 he made public his convictions on that subject, and the matter was considerably discussed at the time. He now revives the subject, in order to suggest new experiments. He asserts that "collodion is the best varnish for negatives, or, rather, is better than varnish, because it does not reduce intensity, and, per consequence, generally makes re developing unnecessary. It cannot become sticky by heat of the sun, and is more readily removed than varnish. It has sufficient protective powers to preserve an ordinary negative with only one application, and that power may be increased by successive coatings."

The mode of preparation is to wet the collodion with as small a quantity of alcohol as will do it thoroughly, then to accomplish the solution with the smallest possible quantity of ether that will destroy the structure of the cotton, and reduce it to a pasty mass. Now bring it to condition for use by adding four or five times its bulk of alcohol, and when the negative is dry and cool, flow as usual. Care must be taken not to add too much alcohol, or it will flow clotted, and there must be enough, or it will partially dissolve the film. Of course, the alcohol must be nearly or quite free from water, and the cotton must be of a quality that easily and completely dissolves. Its flowing qualities are impaired somewhat by use, but are easily restored by the addition of a few drops of ether. The fact of its being so easily prepared by any one will commend it to trial. I have not yet had time to test it.

Our National Exhibition.—It is with a great deal of gratitude and pleasure that I acknowledge the courtesy of the foreign journals in noting our coming Exhibition so favourably. We are all busied preparing for it, and it promises to be a grand success. Some photographers who have written me that they will attend, will travel from two to three thousand miles to be there. They see far enough ahead to understand the advantages to be derived from contact with their co-workers, and from the study of the work that will be on exhibition.

Our most distinguished guest will be our mutual friend, Dr. Vogel. He has telegraphed us that he will be with us; and would that our good friend the Editor of the News, and all his *confreres*, could be here too. Our country is large enough for you all, and you should have a good time. We welcome all who love our *blessed* art.

Philadelphia, April 15th, 1870. Edward L. Wilson.

INFUSION OF QUASSIA AS APPLIED TO THE PRODUCTION OF DRY PLATES.

BY JOHN N. SLEDDON.*

Take an ounce and a-half of quassia chips and put it in a covered jug with thirty ounces of rain water; place in an oven until it boils thoroughly. The wood, when thoroughly saturated, sinks to the bottom. The solution, when cool, is ready for use.

Presuming that the operator has a nitrate bath (say forty grains strong and slightly acid) which will give a clean picture by iron development, he may take any good bromo-iodized collodion and coat his plate, and dip it in the nitrate bath until a good opal deposit is shown, which may be looked for in about five minutes or less. Take the plate from the nitrate bath and dip it in a bath of rain or pipe-water, say, for five minutes; then dip the plate in the quassia infusion for five minutes, drain the plate, and place it to dry on blotting-paper, and, when dry, it is ready for use.

By having the nitrate bath and the water and quassia baths ranged side by side, and shifting the plates forward, a dozen plates can be prepared in an hour. Small plates, say, stereographic size, require no substratum; but, for full plates, or upwards, I use Helsby's compound, which answers very well I think it is benzole holding india-rubber in solution. The time of exposure is about twice that of a wet plate.

To develop, wet the plate under a tap thoroughly, and then pour over it pyrogallic acid—three grains to the ounce. Return it to the measure, and add cautiously dilute liquor ammonia, and flood the plate again. A feeble image is at once apparent, and by washing off the first developer and applying pyro and silver the image is rapidly brought up, and any amount of intensity may be obtained without risk of fogging the plate.

It is rather singular that if a quassia plate be used while wet it may be developed with iron (and gives the intensity of black ink in the high lights); but when dry I have not been able to get a satisfactory picture by iron development.

This process may be used for printing transparencies or pictures on opal glass; but for these purposes I would recommend that the plates be well washed under a tap after leaving the quassia bath. I have used the same solution until it got quite the colour of port wine, and had been prepared some six weeks, and could perceive no deterioration in the plates.

I have added to the solution various substances, such as loaf sugar, bicarbonate of soda, bromide of ammonium, glycerine, and chloride of sodium; but, except in the case of bicarbonate of soda, I do not think any advantage is gained by the addition. Bicarbonate of soda (two or three grains to the ounce) appears to give a rapidly-developed picture without the use of ammonia, and the image is very red and non-actinic.

I have used Mawson's, Keith's, and other collodions of known repute, and I am now working with a collodion made by myself, the formula being—

Pyroxyline	15 grains
Ether	1½ ounces
Alcohol	1½ ,,
Iodide of cadmium	8 grains
Bromide of ammonium	7 ,,

The negative of the house now shown was taken with this collodion, with a lens one five-eighths inch, and stop five-sixteenths of an inch; exposure one and a-half minute on a tolerably sunny morning.

Will any photographers, amateur or professional, give the quassia a trial, and let me know the result?

ON A METHOD OF OBTAINING NATURAL CLOUDS ON LANDSCAPE PICTURES.

BY ADOLF HUBNER.*

A recent discussion among the members of the Berlin Society for the Advancement of Photography on the subject of clouds in landscape photography, induces me to give my own practical experience in the matter.

My mode of proceeding is simple in the highest degree, and may be briefly described as follows:—At the same instant that the exposure commences, I cover from above, by means of a piece of black cardboard or other suitable object, about two-thirds of the lens (according to the space which the sky and background occupy upon the focussing-glass), and move this shield slowly down and up. If the exposure, for instance, be fixed at twelve seconds for the foreground, I proceed in such a way that, during ten seconds of the time, two-thirds of the surface of the lens is covered, the cardboard shield being moved to and fro, so that at no period is the foreground intercepted, while the sky is always completely shut out. After the lapse of the above interval, the lens is for the first time wholly uncovered by the withdrawal of the shield, and the clouds allowed to act upon the plate for two or three seconds, when the exposure is brought to an end.

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* Read at a meeting of the Liverpool Amateur Photographic Association, April 26, 1870.

* *Photographische Notizen.*

In this manner of operating, therefore, it will be seen that I allow an uninterrupted exposure of twelve seconds for the foreground, of seven for the middle field, and of two seconds for the sky and clouds.

As regards the covering up of the lens with the shield, one need have no misgivings; even if there are in the foreground any objects—such as spires or trees—rising up into the background and sky, no failure in the result is to be feared, as a harmonious picture will be secured all the same. Only care must be taken to move the shield to and fro with regularity, commencing with a slight movement, and increasing the same afterwards; and manipulating in such a manner that, commencing from the foreground, the exposure decreases, until for the sky but a very short and suitable period is given. The exact degree to which the lens should be covered and the shield moved must be estimated by the operator when examining the image upon the ground glass, and the shutting out of the picture afterwards proceeded with according to judgment.

As the lens used for landscapes is frequently the first combination of the portrait lens reversed, and the diaphragm is thus brought into the immediate vicinity of the shield, it is well to work the latter in front of a conical tube adjusted before the lens, to prevent any injurious reflection; the operation is indeed rendered more easy by this arrangement, owing to the greater width of the opening. The tube or sunshade must be coloured inside of a dull black, and should be capable of being firmly yet easily adjusted to the lens. It should likewise be furnished with an easily fitting cover.

The method of working I have described is free from complication, and the arrangements necessary are of the simplest kind; by its means cloud masses in beautiful harmony with the landscapes may be secured, and thus the difficult and tedious task of printing in artificial clouds altogether avoided.

SOMETHING NEW ON SILVERING PAPER.

Always ready to lay before our customers anything new or valuable in photographic manufacture, we would not be doing our duty to them did we not describe a mode of silvering the paper which we have found of very great value; indeed, we have no hesitation in stating that anyone trying the plan will be very much pleased with the result.

Provide a board slightly larger than the largest piece of paper you intend silvering; cut pieces of white blotting-paper of the size of the board. When about to silver your paper, place the board in a convenient position near the silver bath, with one end elevated to an angle of say thirty degrees. Float your first sheet on the bath, and then place a piece of blotting-paper on your board. When the sheet is ready to lift from the silver solution, lift it by the two corners nearest you, and draw the wet albumen surface against the end of the bath; lift the sheet of paper very slowly, and allow it to cling with its wet side tight to the end of the tray. This it will easily do if you are careful to lift the paper perpendicularly over the end of the dish. You will thus wipe off, as it were, nearly every drop of the free nitrate from the face of the paper, saving waste. The only precaution necessary at this stage is to lift the paper slowly and straight up, so that it clings to the inside of the end of the dish. Now lay your sheet face up on the blotting-paper on your sloping board, taking care that the end of the sheet that came last off the bath is laid on the highest end of the board. Prepare a second sheet, and when nearly ready to lift off the bath, cover the sheet first prepared; and now partially dry, with another piece of clean blotting-paper, and lay the second sheet on top of this, as before. Proceed in like manner with the rest, and, when finished, put another board on top of all, and allow to dry.

The advantages of this mode of proceeding are numerous: saving of silver, no messing and dropping round, perfect equality of sensitizing, absence of measles, mealiness, spottiness, and all defects inherent to imperfect silvering; beautiful brilliant surface when printed, and your paper is always flat. If you try this plan you will find it cleaner, surer, simpler, and better than any other plan with which we are acquainted.—*Canadian Journal of Photography.*

PEELING OF THE FILM.

BY H. T. ANTHONY.

I have had recent occasion to note a point where a disregard of the conditions of temperature will be likely to cause trouble, especially in cold weather. This trouble takes the form of the peeling of the film from the plate after varnishing. Persons who look no deeper than the surface are apt to attribute the trouble to the varnish, and condemn it because the film peels after the varnish is applied. The fact is that the varnish only makes evident a defect which the lack of care has caused. This defect is generally occasioned by using either the silver bath, or the developer, or both, too cold. As it is not, probably, always practicable for a photographer to keep his bath and developer at just the right temperature, it will be a good precaution in cold weather to flow the negatives after the final and thorough washing with a weak solution of gum arabic, say ten grains to the ounce of water. This will obviate that trouble.

Another cause of non-adherence of the film to the plate may be presumed from the liability of condensation of moisture upon the glass in cold weather, if the glass should happen to be taken from a cold room into a warm, moist operating room.

A very slight film of moisture is amply sufficient to prevent the adhesion of the film; and photographers, under such circumstances, and indeed generally, should rub off the glass immediately before coating with collodion.

A sovereign prophylactic for trouble of this sort, however, is found in the practice of coating the glass with a thin stratum of albumen. One ounce of albumen, thoroughly beaten up, and, after settling, mixed with twenty ounces of water, is all that is necessary for coating the glass.—*Bulletin.*

ON THE MOUNTING OF PRINTS, AND THE CHEMISTRY OF MOUNTING MATERIALS.

BY V. G. BLOEDE, CHEMIST.

Though every nook and corner of photography, and subjects in the slightest degree connected with the same, have been explored and overhauled, until there seems not to be a single branch of the same which has not been written upon by a score of authors, yet, comparatively, very little attention has been paid to the investigation of the nature and properties of adhesive substances used in mounting prints, in order to determine which of them, or which combination of them, is best adapted for this purpose. The great importance of the subject, both in regard to the finish and permanency of the print, is, I think, generally admitted; a thorough and scientific, but concise, treatment of the subject will therefore, doubtless, be generally received with interest, and read with some little profit by the practical photographer.

There is scarcely an adhesive substance known to commerce, which has not been tried and more or less generally adopted by the profession. Yet, after due trial, the preference has been invariably given to starch paste, and for reasons which can be explained on scientific grounds.

There is not another substance which, taking cost and chemical *pros* and *cons* into consideration, can at all compare with simple starch paste as a mountant. In the first place, let us consider what properties a good mountant should possess. It should be cheap, white, or, at least, not highly coloured, not liable to spontaneous change or fermentation upon the mounted and finished print, not readily soluble or readily affected by moist air, must be easy of preparation, not easily absorbed into the tissue of the card or paper, not liable to chip or peel off by age, nor in any manner to undergo a spontaneous change or chemical decomposition which would destroy or affect the beauty of the print. Taking all these points into consideration, we see at a glance that the selection of starch paste as a mountant was a most judicious and excellent one. The chief objection to gum arabic, dextrine, the so-called flourine, and other like gums, is their liability to undergo spontaneous change by acetous fermentation, untechnically termed "scouring." This change is produced in them by their containing variable quantities of the substance known as grape sugar, which, especially in dextrine, is rapidly changed into acetic acid, which, if it does not destroy the print, has at least the property of dissolving the albumen, thus giving rise to a dull print without brilliancy, a trouble which many photographers have experienced without being able to explain. Though it is true starch also "sours" in solution, yet it never undergoes this change or alters in composition when once upon the dried and finished print. Then it never soaks into the texture of the paper as gums do, but, forming a sort of sizing upon its surface, adds greatly to the gloss and beauty of the finished print.

Glue is next best to starch, but there are objections to its use, which have successfully excluded it from competition. The objections are, however, entirely mechanical, and, chemically considered, it is fully equal to starch. Having, we think, explained satisfactorily the universal preference for starch, and shown that, on chemical grounds alone, it is fully sustained, we will proceed to give some formulæ for the preparation of several mountants of superior excellence.

Simple Starch Paste.

Corn, wheat, potato, or rye starch may be used for this purpose. The common laundry starch (in this country consisting of corn starch) is perfectly good and reliable. To prepare it, pour cold water upon a few ounces of the starch, and rub it into an even paste; add this paste, under constant stirring, to briskly boiling water, until an even and homogeneous paste of sufficient thickness has been formed. Then remove the pot from the fire, and strain its contents through a piece of Canton flannel, having its woolly side turned inwards. This paste can be preserved without change for a considerable time in the manner to be hereafter described.

Compound Starch Paste.

Take a handful of white glue, and allow it to become perfectly soft by soaking in cold water. Then prepare a somewhat thin starch paste, and while it is boiling briskly add the glue in the proportion of two to three ounces to every pint of paste. When the whole of the glue has been dissolved, strain the paste in the manner directed above. This paste becomes jelly-like when cold, and can best be used warm. For this purpose place the vessel containing it in a pot full of boiling water.

Gum Tragacanth Paste.

One of the very best materials for mounting prints, and one that has received the least attention, is gum tragacanth. It can be made into a paste of any required consistency with cold water, thus overcoming the chief objection to starch paste—the trouble of preparation. In appearance and properties it greatly resembles starch, and the only objection to its use is its cost. As, however, one pound of gum will make several quarts of paste, the cost is not so very great.

The mode of preparing the paste is very simple. Place a quarter of a pound of the gum in any convenient vessel, and pour a quart of lukewarm water upon it. Allow this to remain until the gum has been perfectly softened and dissolved. Strain through fine cloth, having previously diluted it to proper consistency.

Gelatine Paste.

Add to the foregoing paste two ounces of glue or gelatine to each pint of paste, and let it dissolve thoroughly; then strain.

Gum Arabic and Starch Paste.

The adhesive properties of starch paste may be greatly heightened by using the following formula:—Add four ounces of gum arabic to a quart of water, and let it dissolve perfectly. Bring the thin mucilage thus obtained to a brisk boiling, and add sufficient starch to make a paste of the required consistency.

Finally, as to the best and most efficient methods of preserving starch paste, or other mountants, during the hot season, when they are so liable to change. Any strong essential oil has preservative power, so has creosote and carbolic acid, the latter to an extraordinary extent. The strong smell of creasote, however, makes it entirely unfit for use. If an essential oil is used, it not only preserves the paste for a considerable time, but also imparts a pleasant smell to the print. Alcohol, too, has some preservative power, and has been frequently suggested for this purpose, but is not very efficient. The following solutions are excellent:—

Alcohol	4 ounces
Oil of cloves	½ ounce.

Alcohol	4 ounces
Oil of bitter almonds	½ ounce
Oil of cloves	½ "

Alcohol	4 ounces
Oil of sassafras	2 "

Alcohol	4 ounces
Oil of wintergreen	2 "

Add one ounce of either of these solutions to every half gallon or gallon of the paste, and it will keep three times as long as without this addition.—*Photographic Mosaics.*

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ON THE PRODUCTION OF NEGATIVES BY THE CARBON PROCESS.

BY LEON VIDAL.*

When the double transfer system of carbon printing is employed, a direct image is obtained, the relative positions of the parts being in the same order as in the original; but when the single transfer is employed by applying it immediately upon paper, the print obtained is reversed, and there is an opportunity of utilising the simplicity of the Johnson process *direct* upon paper—that is, of suppressing the intermediate vehicle while obtaining images in their true position.

Various means have been proposed for avoiding double transfer, and M. Marion has published a note relative to pellicular negatives, the object of which was to indicate a means of forming by the carbon process cliches which could print a positive on either the one side or the other.

M. Teissiere and myself, at the Photographic Society of Marseilles, have indicated, as the most simple means of reversing of the cliche, the exposing in the camera of the sensitive layer of collodion at the back instead of exposing it in the usual manner. But this simple means, the value of which has since been demonstrated, is only applicable to negatives to be yet made; and, as to those which exist, it would be well if we were able either to reverse them or to multiply them, so as to render them suited to the new process of carbon printing. We have tried to obtain carbon cliches, and the following are the facts furnished by experiments.

The negative to be reproduced is exposed to the light three times the usual time required for furnishing a good image to be viewed by reflection. It is exposed in contact with paper prepared with a mixture as follows:—

Water	100 parts
Gelatine	10 "
Lampblack	2 "

This mixture, highly charged with black, is put upon the paper, and the layer which covers it has the thickness of about half a millimetre. It is sensitized with one and a-half per cent. of bichromate of potash, and when the sensitized sheet is quite flat in the solution, a plate of ground glass coated with stearine is placed under it, and the two are withdrawn from the solution, the two surfaces in contact. They are pressed between blotting-paper, and left to dry, after which the glass is removed. Thus a layer is obtained, the surface of which is perfectly plane, without the unevenness which in the paper with the mixture affects the form of the grain, and is an obstacle in obtaining absolute fineness in the proof.

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* Read at a meeting of the Marseilles Photographic Society.

Before employing the tissue thus smoothed, its surface must be cleaned with cotton steeped in alcohol, in order to remove the stearine, which would otherwise prevent the water from subsequently wetting the surface. That being done, before or after the exposure, the impressed tissue is put into water, and taken out as soon as it is extended upon a stearined ground glass. The development takes place as usual, and when once the image is developed, when all excess of black has disappeared, several layers of gelatine, consisting of—

Water	100 parts
Gelatine	10 „

are poured upon its surface, so as to obtain a definitive layer, which, when dried, is of the thickness of half or three-quarters of a millimetre. When left to dry it is placed horizontally, and sheltered from all dust. As soon as the film is fixed it is treated with alum, so as to prevent the film from being affected by humidity. As a matter of course, the frame intended to enclose the original negative should be placed at the back of the cliche.

When the gelatine is perfectly dry the pellicular positive is easily removed, care having been taken to draw a knife all round it, deep enough to reach the ground glass. I do not understand why plates of metal rather than glass are recommended; for the glass, by reason of its transparency on the one hand, enables us to see the image when it appears, and on the other affords such facility for cleaning that it must be infinitely superior to the metal. The positive pellicle, when obtained, is preserved, and is ready for being transformed into one or several negative cliches, the operations being as follow:—

On the side of the pellicle which should adhere to the glass a paper containing a mixture with the proportions above indicated is applied in the manner before stated. The positive serving as a cliche should be encircled by a thin opaque margin. The exposure should be thrice as long as is required to produce an ordinary impression.

After printing one or more negative proofs, they are applied under water upon many or one polished glass plate previously well cleaned. When the adhesion is perfect, after having been about a quarter of an hour out of the water, the usual development is proceeded with in hot water, and when that is finished it is treated with alum, and left to dry on the final gelatine film. Varnish may be used, but it is not necessary, as the proof adheres to the glass so firmly as to resist strong rubbing.

By this means negative reversed images are obtained capable of furnishing carbon images directly. The negatives being applied upon glass are thus kept more rigid than if they had been pellicular. They will stand frequent use better, and, in case of accident, the pellicular positive will enable you to obtain one or more fresh negatives.

You may have read M. Marion's note on this subject, but it appeared to contain indications which were too vague to be of service to learners. My endeavour has been to present it in a clearer and more practical manner.

Correspondence.

STUDIO AND LIGHTING.

Dear Sir,—In this age of improvement in science and art, will it ever be that we country photographers will, after our day's work is over, be able to jump into a balloon, and, guiding it by means of wings, arrive in London in time to spend a couple of hours at the meeting of some photographic society, and then, starting in the morning, reach our home in time for the labours of next day? How much it would lighten the labours of the day if we could!

Had I been there the other evening, when Dr. Anthony's paper was discussed, I fancy I could have borne practical testimony to the efficiency of such a studio as he proposed, division forming dark room, &c., included, with very little modification. I have worked in such a studio for some years, and it is most comfortable and convenient, and gives the very best results with little trouble. It is 12 feet wide, 26 feet long, 9 feet high to the eaves, and 14 feet to the ridge. It stands east and west, ridge roof, all slated except 14 feet by 6½ feet on the north roof. The glass in the side is 16 feet by 6½ feet. I have a black blind over the end of roof where the camera stands for several feet, and white blinds for the rest of roof. On this side I have 12 shutters, painted black on one side, and white on the other. I can at any moment lift off these shutters if I will, but I generally work with them all closed except one or two. As indicated on the ground plan, there are two windows in the side, which I can open when I wish. From the height of the wall and quickness of pitch on roof, the top gives a volume of soft diffused light, which is particularly suitable for groups, and by opening one or two shutters I can throw a point of brilliant light where I please.

Per book post you will receive a few samples of the most difficult subjects I could select. No. 1, a cabinet of a gentleman, tall and slender, with very white hair and whiskers, eyebrows to match, dark blue eyes, and complexion very much bronzed by exposure. No. 2, a group of twelve men. No. 3, a group of six ladies and gentlemen, the gentlemen very dark, and the ladies fair, with blue eyes. No. 4, a gentleman with sandy hair and whiskers, and blue eyes, was taken on the 22nd of December, on a dull day, in thirty seconds, with a 1B large lens. You, sir, can say whether the lighting is such as you can approve. Some of the gentlemen are as particular about their studios as ladies are about their drawing rooms; and so they ought to be. They wish them to appear large and spacious, and not to be cut up by small rooms. Ladies do not like their drawing rooms cut up, but they do not object to a nice fancy screen to cut off draughts. Now suppose a screen in the studio as a ground plan, 7 feet high, and 6 feet wide, coloured at fancy, or to match the rest of studio, and on it hung small pictures of pleasing subjects. For those who work both ends of studio, it may be hinged to side, and can be moved at pleasure, and, of course, covered on both sides. Mine is the size I mention, but is not hinged, as at present I do not work both ends.

It is very useful for two purposes: you can direct the sitter to look at one picture, and, if that does not suit the position of the head, you can tell them to look at the picture above, below, or at either side.

Behind the screen you can dispose of the friends of the sitter, and that is often very desirable. You may, if you choose, have a small peep-hole for the friends to see, just large enough for them to get a peep without the sitter seeing their eyes. I have often got fine expressions by the sitters knowing that their friends were looking. With some it would make them laugh. In that case, do as a sitter of mine did a few days ago: she made her friend read from a volume of Shakespeare while she was being taken, to show that her friend was not looking. It had quite the desired effect.

But, to spare the Editor's scissors, I must conclude this lengthy epistle, and thanking you, sir, for your kindness in allowing all your correspondents fair play and no favour,—I am, yours very truly, D. Welch.

Newry, Ireland, April 25th, 1870.

[The lighting of the portraits our correspondent encloses is very excellent.—Ed.]

MANIPULATIONS IN CARBON PRINTING.

Dear Sir,—Waiting the publication of the manual of the Autotype Company, I have been trying experiments with Johnson's pigmented paper and transfer paper, without success.

I rubbed over the glass plate wax and resin in turpentine, and then, according to Mr. Johnson's specification, "immediately rubbed it off again." The picture being developed, I applied the transfer paper wet from the hot water upon it, and let dry; but, to my surprise, it adhered so firmly that it was impossible to remove it.

Please to reply to the following questions:—

1. Should the film of wax, &c., be distinctly visible?

2. Should the smear of wax be soft upon the plate? Mine was.

3. If the water used for development were too hot, would this prevent the transfer?

Yours respectfully, Holden.

[The film of wax should be the thinnest perceptible layer, such as rubbing and rubbing off with a tuft of cotton wool would give. The picture should have dried after development before the transfer paper was applied. The film of wax should be almost too thin to be soft, but it will be soft enough to show finger marks if rubbed with the finger. If the water be too hot, it will melt and partially displace the wax, in which case the image will be very difficult to remove from the glass.—Ed.]

ENAMELLING CARD PICTURES.

Sir,—For the benefit of your Irish correspondent photographer, allow me to inform him that the spots in his prints may be touched out with colour and gelatine, or, better still, with colour and spike oil well rubbed up on a piece of ground glass with a muller. No difficulty is in the way of enamelling the cards after mounting, if the contact between the card and collodion surface on glass is made under water.

If you think the matter sufficiently interesting, I shall have pleasure in forwarding you fuller details.—Yours,

An Old Hand.

[We shall have pleasure in receiving exact details of our correspondent's operations, which, coming from a *skilful* as well as *old hand*, cannot fail to interest many less experienced readers.—Ed.]

A FEW WORDS ABOUT CARBON PRINTING.

Dear Sir,—Carbon printing does not seem to make its way in photographic practice, and if all we read in its favour was quite correct, and it was as easily manipulated as stated, in spite of the heavy tax on its practice, no doubt it would be more in practice. Ten pounds per annum for a licence to work it! Money enough to buy a ream of albumenized paper and silver enough to silver it. Here is the great drawback. How different and liberal in comparison are Mr. Sarony's terms, or those of Messrs. Window and Bridge—merely a small percentage on the photographer's earnings!

The Autotype Company seem desirous to absorb profit, principal, interest, and all. The public at large is still doubtful of photographs, and it will require many years of trial to prove to photo patrons the superior durability of carbon prints. Carbon printing is on its trial. The Wothlytype, alkaline gold toning, and other silver processes, have been tried, and found wanting, and they were to produce permanent prints. Is there any silver process that can be said to produce permanent prints? I think there is, and I am strengthened in this opinion by the following circumstance.

In a small town not very far from Swansea a young tradesman commenced business in a new shop as bookseller and stationer. A traveller one day persuaded him to invest in a few dozens of photographs, mostly carte-de-visite vignettes of the usual sort—authors, divines, singers, &c. These were arranged in a long row in the bottom of the shop window, and did not obtain a ready sale. Business frequently called me to this small town, and I watched with interest those cartes-de-visite, under the influence of sun, moist air, gas, vapours, &c., gradually lose their original beauty, all except one; this one stood the test bravely, and kept its colour. On writing to the artist who produced it, I was politely favoured with particulars of the process, but not for publication. It will require fresh apparatus and fresh appliances; when I have these I intend to try it. I think that I may venture to state that the prints are toned with bichloride of mercury instead of gold.

If some kindly disposed reader of the News will favour me with a carbon print (for I have but one, and that not a good one), I will mount it side by side with one of these peculiar silver prints, and cover over one half of each, expose them for the next six months in my glass house, then send them to the Editor of the News to report thereon.—Yours truly,

18, *Union Street, Swansea.* Thos. Gulliver.

[Unless we misunderstand the case, our correspondent is in error as to the licence fee. The purchase of the tissue from the Autotype Company carries the right to employ it for portraiture and landscape without payment of licence fee, except where special privileges are required. We shall be glad to learn particulars of any process, silver or otherwise, which promises permanency; but we fear that stability can scarcely be looked for in any method of toning in which salts of mercury are employed, as these are notorious for their chamelion character.—Ed.]

Proceedings of Societies.

Liverpool Amateur Photographic Association.

The fourth monthly meeting of the present year was held on the 26th ultimo, at the Free Public Library, William Brown Street, the President, Mr. John Henderson, in the chair.

The minutes of the former meeting were read and passed.

The recommendations made to the Library and Museum Committee by the Council of the Association, as to the best mode of producing photographs of the works of art in the Museum, were also read and approved.

Mr. Thomas Griffiths was elected a member of the Association.

The President made some remarks on the subject of substratums and preservatives. He stated that dilute albumen was ready of application, obviated drying the glass, was very certain, and, in his experience, never led to blisters, which he attributed to atmospheric influences before the sensitive film was superadded. With regard to preservatives, he spoke strongly in favour of gum in the tannin, especially as giving a non-actinic image with less intensification than by any other means.

An interesting discussion followed, during which it was elicited that alcohol is by no means a necessary addition to the tannin bath.

Mr. Roberts again advocated the use of the essence of coffee as a preservative, and showed some fine transparencies taken on plates prepared with it. Though kept for a long period, the quality of the solution was perfectly unimpaired.

Mr. J. N. Sleddon read a paper "On the Infusion of Quassia as Applied to the Production of Dry Plates" (see page 210), and showed numerous examples of the results. A vote of thanks was passed to Mr. Sleddon.

A conversation ensued on the use of ground glass for negatives, and

Mr. J. A. Forrest thought it would answer instead of backing plates with colour to prevent blurring.

This opinion was not, however, in accordance with that of the members generally.

The Rev. T. B. Banner spoke of using the ground side of the glass to sensitize upon.

Mr. Mawdsley said that the impression that plates so prepared would not require a substratum was erroneous. As regarded collodio-bromide, the film would certainly break up, sooner or later, for some reason not understood.

Mr. Forrest observed that most photographers used an albumen substratum of one part in twelve of water.

In addition to the photographs already named as shown, Mr. Henderson had brought upwards of seventy stereographs of the South of France and Italy, including some of Pompeii; and Mr. Forrest exhibited three portraits by Mr. Fry, after the manner of M. Salomon.

Bristol Photographic Society.

The ordinary meeting of this Society was held at the Philosophical Institution, April 28th, 1870, Mr. Beattie, V.P., in the chair.

The minutes of the last meeting were read and passed.

The Chairman then said the members were aware that Mr. Solomon had come down to Bristol to exhibit to them his new method of enlarging by the magnesium light. The method was a new one, and the light employed was peculiar from having a greater actinic effect than any other light used for the purpose. The process would be of much use to the practical photographer, by enabling him to make a great economy of time, allowing work to be done at night which must otherwise have been confined to the daytime.

Mr. Paul, under the direction of Mr. Solomon, then proceeded to produce a twelve by ten enlargement on collodion from a C.D.V. negative, which he subsequently transferred to paper. The paper used for this purpose is an article manufactured and sold by Mr. Solomon, which seems to answer its purpose in every respect. The exposure with an ordinary

C.D.V. portrait lens on the magnesium camera was twenty-five seconds. The tone of the picture, which was developed with pyrogallic and citric acid, was everything that could be desired. Mr. Paul then produced a twelve by ten negative from a collodio-chloride transparency of the C.D.V. size. This was developed by a weak iron solution—about ten grains to the ounce—and required an exposure of three seconds only, producing a fully exposed negative of good tone and colour. The operator next floated a whole-size sheet of paper on a thirty-grain silver bath, on which he produced an enlarged print from a C.D.V. negative, with an exposure of about sixty seconds. This was developed with a plain saturated solution of gallic acid, which effected the development without stains and very quickly. The resultant print was everything that an artist could desire for working up into a very effective picture, either in crayons or colours.

Mr. Solomon stated that the value of the magnesium consumed in producing this negative was about a penny. He then called the attention of the Society to a smaller magnesium camera, furnished with a microscopic objective of about an inch focal length, with which he exhibited enlarged images of popular microscopic objects from insect life; this instrument being admirably adapted either for producing enlarged photographs of microscopic objects, or merely for the purposes of demonstration.

Mr. Paul was then very highly complimented by the members present for the masterly manner in which he performed the experiments, which, considering that he had to work three entirely different processes in rapid succession, and under somewhat makeshift conditions, reflected great credit on his skill as a manipulator.

There was a lively discussion during the time the experiments were taking place, and the members expressed great commendation of the facility with which the various classes of paper and collodion reproductions could be obtained by Mr. Solomon's new magnesium arrangements. The lateness of the hour prevented any subsequent discussion.

The President then referred to the simplicity of the process, and stated that the magnesium light would be a great adjunct to every photographer in economizing his time and enabling him to produce a larger quantity of work. If he were still a working photographer, he should undoubtedly furnish himself with the apparatus required by the process, the cheapness of which brought it within the means of most practical photographers.

Mr. Barton then proposed a vote of thanks to Mr. Solomon and to Mr. Paul, which was carried unanimously.

The proceedings then terminated.

◆

Talk in the Studio.

Photographic Society of London.—The usual monthly meeting of the Society will be held at the Architectural Gallery, No. 9, Conduit Street, on Tuesday next, 10th inst., at 8 o'clock. On this occasion Mr. Valentine Blanchard will offer some remarks upon the subject of lighting; Mr. W. T. Morgan will exhibit some coloured photographs upon porcelain; and Mr. England will read a communication on dry-plate photography.

South London Photographic Society. — The next meeting of the South London Photographic Society, on Thursday, May 12th, will be devoted to the exhibition of photographs, and conversation thereon. Members and their friends are requested to attend, and to do all they can to make this little annual exhibition as interesting as heretofore.

Improvised Touching-Desk for Negatives.—A correspondent says:—"I find I can make a touching-out desk, sufficiently good for ordinary purposes, from a piece of millboard, by cutting out a portion the size of the negative, and glueing on two small bits at the lower edge for the glass to rest its edge against, to prevent the negative from slipping down. The legs are of millboard, doubled back and secured at the proper angle by bits of string. The desk itself is strengthened and made unbendable by glueing strips of deal to the back. The reflector is a small looking-glass from my travelling dressing-case. I have received so many valuable little hints from apparently simple dodges that kind people have sent to the News, that I forward you this in case it may be of use to any of your readers who wish to try experiments in touching-out, as it is portable, and only costs a few pence, and will answer their purpose as well as a properly made desk at a proper price. —C. A. M. W."

Great Telescopes for Astronomical Photography.—M. De la Rue is having a lens constructed of thirteen inches in diameter. Prof. Henry Draper has very nearly completed a new silvered glass reflector of twenty-eight inches in diameter, the largest of the kind yet constructed, except one by Foucault. With this instrument the original negatives of the moon will be taken six inches in diameter, with provision for extending them to nine and a-half inches if desirable. Prof. Draper expects thus to obtain photographs of larger size than any that have been produced. There is now being erected at Melbourne, Australia, a powerful reflecting telescope four feet in diameter, of Cassegrain form, which will be supplied with the necessary apparatus for photography as well as for spectroscopic investigation.—*Journal of Franklin Institute.*

A Good Plan.—Procure some thin *tea* paper, about the thickness of a sheet of albumen paper. Cut out a number of pieces (a lot) rather larger than a quarter-plate; provide a tin, glass, or zinc shape, rather larger than a card picture—one-sixteenth of an inch larger each way will be sufficient. With this shape cut openings in your pieces of paper large card size; lay them over your finished negatives, and having found the proper place for them, gum them to the face of the negative, and trim them with the scissors to the size of the glass. Cut up your silvered paper carefully to the size of finished prints (in short, trim your paper before you print it), and you can easily lay the paper in its proper position in the mask. Advantages: saving of paper, you can get so many more out of a sheet; saving of time, you can easier trim the paper unprinted than when it is printed; and the mask can always be put on correctly with lines in the background, and sometimes it is difficult to trim the print straight with these lines, they are so dark.—*Canadian Journal of Photography.*

Washing of Sensitized Paper.—In our last number we published an article on the washing of sensitized paper. At that time we had made one experiment, which was not so successful as regards the keeping quality of the washed paper as we anticipated. That experiment was made by floating the paper upon two dishes of distilled water. The paper, when used immediately, printed quickly and toned easily, but a piece kept for two days became quite discoloured. We subsequently made another trial, which seems thus far to result very favourably. Instead of using distilled water, we floated the paper upon three dishes of ordinary drinking water. The paper has now been prepared eleven days, hanging in a dark room, and is still white and apparently unchanged. A piece was printed after nine days preparation, and worked perfectly well, printing very quickly, and toning brilliantly. It will now remain to test the keeping qualities in warm weather.—*American Photographic Bulletin.*

Varnishing Negatives.—It is not a good plan, generally speaking, to varnish a negative or positive from the stock-bottle, pouring the excess of varnish directly back into the stock-bottle, for the reason that dust and pieces of the collodion film are very apt by such a practice to accumulate in the varnish. The best plan is to have a wide-mouthed bottle, into which to pour some of your varnish from the stock-bottle. In this way any dust or foreign matter spoils only a small proportion of the varnish. When this bottle is not in use, it should be covered with a piece of flat glass. It would be a good plan to have the top of the pouring bottle ground flat, so that when the piece of glass is laid upon it the alcohol cannot escape. The varnish which, from time to time, may become spoiled for use, may be preserved in a tight bottle, and when sufficient has accumulated it may be filtered, or strained through a very fine muslin cloth. Other advantages of this mode of working are, that there is no cork to remove or to impart dust to the varnish, and, as the top of the bottle is always covered by the piece of glass, no dust can settle upon the lip, to be taken up by the varnish.—*American Bulletin.*

Gas-tight Rubber Tubes.—India-rubber tubing is slightly permeable to gas. As a fact, the amount which escapes through the walls of the tube is very small, but there are places in which it may be advisable to render any escape impossible. This can be done by giving the tubing a thin coating of a varnish made by dissolving one part and a-half treacle and two parts of gum arabic in seven parts of white wine and three and a-half parts of strong alcohol. That is the receipt of M. Jouanne, but we have no doubt that beer may be substituted for white wine without harm. The treacle and gum must first be dissolved in the beer or wine, and the alcohol must be added very slowly, constantly stirring the mixture, or the gum will be thrown down.—*Mech. Mag.*

Working of Plaster of Paris.—When two to four per cent. of finely pulverized althea root (marsh mallow) is mixed with plaster of Paris, it retards the hardening, which begins only after an hour's time. When dry, it may be filed, cut, or turned, and thus become of use in making domino-stones, dies, brooches, snuff-boxes, &c. Eight per cent. retards the hardening for a longer time, but increases the tenacity of the mass. The latter may be rolled out on window glass into thin sheets, which never crack in drying, may be easily detached from the glass, and take on a polish readily by rubbing them. This material, if incorporated with mineral or other paints, and properly kneaded, gives very fine imitations of marble, and can be coloured when dry, and can be made waterproof by polishing and varnishing. The chemist and chemical manufacturer will find it an excellent luting for vessels of every kind.

Waterproof Fabrics.—M. Neuman has discovered a new way of waterproofing—or, rather, of making fabrics impermeable to water. The operation is simple, but it must be carried on with care, or the fabric will be ruined. It consists in submitting the tissue it is wished to make impermeable to the action of moderately strong sulphuric acid (57° Baume) for a space of time varying from a second or two to two minutes, according to the nature of the fabric. By the action of the acid the fibres, whether of wool or cotton, are superficially decomposed into a glutinous material. As soon as this has happened (the time required must be found by experiment) the fabric is passed rapidly through water and well rinsed, and finally dried, first in the air and then over cylinders. The glutinous matter will, of course, fill up all spaces between the threads, and no doubt the fabric will be made impermeable. Another way of effecting the same object is to completely dissolve cotton or linen in sulphuric acid, and spread the solution over the fabric, either by means of cylinders or a brush. Calendering seems to be advisable in both cases.—*Mech. Mag.*

To Correspondents.

A Reader.—There are only two French photographic journals; one is the *Bulletin* of the French Society, and is published monthly; the other is the *Moniteur de la Photographie*, published fortnightly, by M. Lacan, 12, Quai de Bethune, Paris. We do not know the terms for advertising.

C. A. M. W.—The tracing paper enclosed may serve, but it is not that commonly used, which is generally made transparent by application of some varnish. It can be procured of most stationers. 2. It is generally secured at the edges of the negative only. 3. The example of serration which you give in your letter is sufficient to prevent the formation of a hard outline. 4. We have not had much practical experience with the varnish in question, but we have no reason to doubt its usefulness. The slightly yellow tint will not interfere with printing, we apprehend. 5. We have not tried the preparation you mention. Thanks. We shall give your suggestions publicity.

J. W. E. L.—There are two or three causes for the want of depth and richness of tone in your prints. In the first place, the negatives are not sufficiently rich in contrast, the shadows being apparently a little fogged; and without a good negative good tones cannot be obtained. Next, you have not printed quite sufficiently deeply, and, in your case most important, you have washed the prints too much before toning. Give the prints only a slight rinse before immersing in the toning bath, and make your toning bath a little stronger; that is, use about six ounces instead of ten ounces of water to the gold mentioned.

H. K. (Whitstable).—So far as we can judge by your plan, you will gain the desired advantage by the proposed alteration. If the ridge were in the middle, it would not so effectually exclude the direct sunlight as it will in the manner proposed. The amount of glass will, we think, be sufficient. So far as we can judge, the alteration will be worth the expense.

A Subscriber.—A triplet, a doublet, or a rectilinear lens will render architectural subjects without distortion. For details, see our advertising pages, and get the catalogues of the opticians whose announcements you find. For groups, as well as architecture, probably a rapid rectilinear will answer your purpose.

R. M. B.—Fuming albuminized paper has, we believe, in most cases, the effect of giving richer and deeper proofs than paper not fumed, and also some increased degree of sensitiveness. This is especially noticeable when weak silver baths are employed. The prints also tone more readily. 2. Try Marion's.

C. E. F.—We have not tried any of the mounting materials referred to, and know nothing of them but common rumour. We believe that one is manufactured by Newman, of Soho Square.

F. B. D.—Nothing is known with certainty of the method employed by M. Lafon de Camarsac. Much of his success is probably due to his skill as a ceramic artist, rather than to the process employed. There are two distinctly different methods of photo-enamelling: one consists in converting a transparent positive in silver into some other metal suitable for burning in; and the other method consists in producing an image in different gradations of some adhesive material, to which ceramic colours in powder being applied, adhere in due gradation. The last mentioned method may be effected in two manners: in the first, a sticky material with a chromic salt is exposed under a transparency to the light, which hardens the lights of the picture, leaving the shadows sticky, so that the ceramic powder adheres. In the other method tartaric acid and perchloride of iron being added to gelatine or a similar body, the film is exposed under a negative, the action of light in this case softening instead of hardening the organic layer, so that the ceramic powder adheres. In all cases it is customary to work on flat glass, and use a film of plain collodion, as a means of transporting the picture to the convex tablet on which it is fired. As a rule, a minute or two at the proper heat is sufficient time for the burning in, but much depends on circumstances. Experience alone is a valuable guide here.

L. D. R.—You should study what is known of physics more carefully before you make suggestions upon which, as you fancy, great discoveries may depend. Light itself is well known to be invisible, and various experiments have been tried which demonstrate this practically. More papers than one, with practical illustrations, have been brought before the British Association during the last few years, giving new modes of demonstrating this fact. It is not bad discipline for a novice to enter upon experiments for proving to himself that which is already known; but it is not well to announce old facts as novelties, and suggest to others experiments for the purpose of demonstrating well-known facts.

D. G.—The irregular streaking at the bottom of the plate where the film is thickest is probably the result of over-iodized collodion. 2. There are many reasons for preferring nitric acid to acetic acid in the bath. In the first place, it is easily neutralized when in excess, without forming any foreign or injurious substance in the bath, as by adding oxide of silver nitrate of silver is formed, whereas acetic acid once in the bath is most difficult to get rid of, and if any attempt is made to neutralize it, acetate of silver is at once formed, which is often injurious. Nitric acid does not seem to retard when a bromo-iodized collodion is used.

Carl Meinerth.—Just received. Thanks. M. de Constant's address is Lausanne, Switzerland.

Wm. Blair.—The examples duly received. Thanks. We presume the present manipulations with the cloth tissue are described in your pamphlet.

H. Milton.—We have not seen any.

Developer.—A quarter of a pound of hypo in a pint of water. Citric acid is best for the formula.

T. Tedrake.—In our next.

W. J. Wellsted.—The insertion of your letter, although, doubtless, well meant, might subject us to the operation of the law libel.

Several Correspondents in our next.

Photographs Registered.

Mr. Hoggard, Coatham,
Three Photographs of Wm. Bennington, Esq.
Mr. A. Garnier, Guernsey,
Photograph of the "Normandy."
Messrs. Jackson Brothers, Oldham,
Three Photographs of Archdeacon Duraford.
Mr. Watson, Hull,
Photograph of Miss M. Isaacs.
Messrs. Downey, Newcastle,
Photograph of Herr Watchel.
Two Photographs of Madame Titlens.
Photograph of Madame Scalchi.
Photograph of Madame Banermeister.
Photograph of Signor Caravoglia.
Mr. J. Sunderland, Birmingham,
Three Photographs of General F. S. Carey.
Miss E. Cantelo, Newport, Isle of Wight,
Photograph from Drawing of Donkey and Well at Carisbrooke Castle.
Mrs. H. W. Westmacott, Durham,
Photograph of Catharine Moody.
Mr. D. Everest, Tunbridge Wells,
Photograph of Rev. D. Hessey.
Mr. Gorringe, Cheltenham,
Three Photographs of Models of Cathedrals.
Mr. R. Symons, Tenby,
Two Photographs of Rev. D. Anthony.
Mr. Mount, Beccles,
Two Photographs of St. Michael's Church, Beccles.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

	PAGE
New Photo-Mechanical Printing Process	217
Which is the Best Dry Process?—Some New Processes	217
Carbon Eburneum Process	218
Rapid Development Printing Process	219
Echoes of the Month. By an Old Photographer	219
Foreign Miscellanea	220
Curious Fact in Molecular Physics	221
Photography in Germany. By Dr. Vogel	222
Experiences of an Experimentalist	223
Manipulations in Johnson's Carbon Process	224
Photo-Mechanical Printing Processes. By Lieut. J. Waterhouse, R.A.	225
Correspondence.—Photographing Criminals	226
Proceedings of Societies.—Photographic Society of London	226
Talk in the Studio	227
To Correspondents	228

NEW PHOTO-MECHANICAL PRINTING PROCESS.

We announced some months ago that Herr Obernetter was engaged in perfecting a photo-mechanical process, in many respects essentially new in character, although bearing close analogy to the photo-collographic processes already in operation. We have now some examples before us which lead us to believe that the process will take a place amongst photo-mechanical printing processes in no wise inferior to the best of those already in practice. The prints before us are from negatives from nature and reproductions, and include both landscapes and figure subjects, some of which form severe tests for the rendering of half-tone. In this respect the process is most successful, the gradation throughout being exquisitely perfect and delicate. In some of the prints the blacks are rich and vigorous; but in others there is a tendency to the weakness and lack of depth which is too often found in lithographic processes.

The quality of the gradation is in some respects different from that of the "Lichtdruck" processes, in which no definite grain is perceptible. Here the greys and half-shadows do not appear to possess a grain; but in the deep blacks an exquisitely delicate grain of an aquatint character, but finer than we have often seen, is apparent on close examination; but it in no wise detracts from the richness and delicacy of the effect. Herr Obernetter is still at work on the process, which he considers still capable of certain improvements, which he hopes to effect. He briefly describes the operation as follows:—

"I coat a sheet of patent plate glass with a solution of gelatine, albumen, sugar, and bichromate; dry it, and expose to light under a negative. I then dust the plate over with powdered zinc, in the same manner as in the preparation of photo-enamels. The plate is now heated to a temperature of 150° Reaumur, or exposed to light until the whole surface of the film has been rendered insoluble.

"Before printing, I etch with dilute muriatic or sulphuric acid. By this operation the parts of bichromated gelatine covered with zinc are rendered, by the formation of hydrogen susceptible of attracting water to a greater or less degree, while the other portions, upon which no zinc has settled, are capable of receiving a fatty ink. The printing is then proceeded with in the same way as with a lithographic stone."

The final result, as will be seen, is the production of an image which possesses the qualities of a drawing on a lithographic stone, although it is produced in a manner different to the similar printing surface used in the "Lichtdruck" processes of Herr Albert and others. We hope shortly to have more to say on this subject.

WHICH IS THE BEST DRY PROCESS? SOME NEW PROCESSES.

The question with which Mr. England commenced his paper at the Photographic Society on Tuesday evening, "Which is the Best Dry Process?" is one which is much more easily asked than answered. The brief statement of comparative results deduced from Mr. England's own experience, and the short but pregnant discussion, eliciting the opinion of some able exponents of dry-plate processes, furnished, however, those interested in the subject with some instructive hints.

Mr. England stated his experience with three processes, all of which he has worked, not merely experimentally, it must be remembered, but on a large commercial scale, producing many hundreds of excellent negatives of Alpine scenery therewith. These three processes were the gum-gallic process of Mr. Gordon, the coffee process, and the collodio-albumen process as modified by himself and described in our pages in former volumes. Each of these processes he found possessed advantages and shortcomings; but, on the whole, he was disposed to regard the gum-gallic process as the best, the advantages outweighing the drawbacks. Mr. England is a most admirable manipulator, careful, neat, and dexterous in an unusual degree, and it may be some consolation to the unsuccessful tyro in dry-plate work to know that at the commencement of his experiments with this best of processes Mr. England met with difficulties. The common trouble of stains and inequalities in developing beset him, and, with all his care, he could not succeed in getting good results in working the formula which, in Mr. Gordon's hands, has produced, perhaps, the finest dry-plate negatives which have ever been produced. To get clean plates, Mr. England felt it necessary to dilute the preservative, using five grains of gum in an ounce of water, instead of twenty grains as in the original formula, and also decreasing the amount of sugar. Again, whilst Mr. Gordon prefers iron development as giving finer results and less tendency to blurring, Mr. England has only succeeded with iron when the plates were freshly prepared, or at least within forty-eight hours. When kept longer, he found that the use of an alkaline solution of pyrogallic acid was a necessary condition of success. The chief drawback, indeed, of the gum-gallic process, in Mr. England's hands, was the failure in long keeping qualities, the excellence and sensitiveness falling off considerably if more than a fortnight elapsed between preparation and development.

Mr. Gordon, who has kept these plates for several months, says, *en revanche*, that the dilution of the preservative, whilst it will undoubtedly make the preparation of the plate without stains easier, will as undoubtedly mar the keeping qualities; hence the failure of Mr. England's plates when long kept was fully explained. In Mr. Gordon's experience the perfect varnish formed by the preservative of full strength—twenty grains of gum, five grains of sugar, and three grains of gallic acid—permitted the plates to be kept a long time, and that without the necessity of alkaline pyrogallic development. For long kept plates it would always be well, however, to give full exposure. In answer to another question, he stated that reducing the proportion of gum reduced the blurring tendency, and washing the preservative off altogether reduced that tendency still more. Both courses, however, reduced keeping qualities, but did not materially affect sensitiveness in any way.

Mr. Frank Howard, a thoroughly experienced dry-plate worker, added strong testimony to the excellence of the gum gallic process. He had got fine negatives from plates developed six weeks after preparation, and, in one instance, obtained a good picture with an exposure of five seconds, the development with the alkaline pyrogallic solution being delayed for a month after the plate was exposed.

With the modified collodio-albumen process and coffee, as with the gum-gallic process, Mr. England found that the plates deteriorated by keeping. But the kept collodio-albumen plates, unlike the gum-gallic, did not give hard negatives, the chief defect being a loss of sensitiveness and a lack of vigour. The coffee plates behaved in many respects like those by the gum-gallic process. He found that reducing the proportion of sugar and adding a few drops of albumen improved the keeping qualities. The sensitiveness might be very greatly increased by the addition of a little morphia to the coffee, but the plates should not be kept more than two days.

The examples by the three processes which Mr. England brought to illustrate his paper were all fine; in many respects those from coffee negatives seemed to possess the finest qualities.

In the course of the discussion, two new processes, or modifications, were described, both of which seem to be worthy of notice. Mr. Gordon said he had recently been trying, with considerable promise of success, a new combination. It consisted in the final application to a Fothergill plate of a wash of acetate of morphia—we presume the usual one-grain solution. The morphia gave great sensitiveness, and the albumen, he believed, would confer keeping qualities. He had only as yet tried keeping fourteen days, but so far the result was in every way satisfactory. Dr. Mann, who had seen one of the results, described it as without any exception the very finest dry-plate photograph he had ever seen. The inducement to seek any improvement upon the gum-gallic process arises from one cause, Mr. Gordon informs us, not before mentioned amongst the objections. If the gum-gallic plates are kept many months in a damp atmosphere, being slightly hygrometric, they became sufficiently sticky or adhesive to cause particles of dust to become attached to the surface, and so to cause occasional spots. This tendency is, however, so slight as to escape the notice of photographers less fastidious than Mr. Gordon.

The other new or modified process was described by Mr. England as giving fine results, and it also consisted of a combination of morphia and albumen. The preservative preparation consisted of—

Acetate of morphia	1 grain
Gelatine	3 grains
Albumen	5 drops
Acetic acid	5 ,,
Water	1 ounce

Plates so prepared would keep a fortnight, and were very sensitive. A solution of pyrogallic acid containing a few drops of ammonia was used for development, this, as in the other processes, forming Mr. England's favourite developer. We should observe that both in the operations of Mr. England and Mr. Gordon, a collodion containing from two to three grains of bromide to each ounce is employed The nitrate bath is strong, and the washing after sensitizing thoroughly effected.

It may not be uninteresting to mention, in connection with a discussion on this subject, the results of a process not referred to at the meeting: we refer to the collodio-bromide process. In a recent number we gave the details of some important improvements Mr. Carey Lea has made in this process, whereby the maximum of good qualities is obtained: great sensitiveness, great certainty, great excellence of result. We have been favoured by Mr. Lea with some examples of this process, which are exceedingly fine in every respect. The subjects are landscapes, and the rendering of foliage, water, and atmosphere is admirable; brilliancy is not lacking, but the delicacy, softness, and general harmony of the pictures are rarely to be met with in dry-plate photography. A letter from Mr. Henderson, of Montreal, who has been working the process, describes it as not only excellent, but by far the most rapid dry process he has tried.

In conclusion, we may remark, however, that at the discussion on Tuesday night, the most skilful dry-plate men expressed their preference for the wet where it was available, and one remark by Mr. Howard should never be forgotten, that to do dry plates justice, they should only be employed under suitable circumstances and on suitable subjects. These circumstances and subjects consist primarily in good light, and in subjects which, whilst well illuminated, will permit a proper exposure, architecture in all cases being more suitable than landscapes or foliage.

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CARBON EBURNEUM PROCESS.

Some months ago we received from Messrs. Robinson and Cherrill some charming examples of a pleasing application of the carbon process to the production of eburneum prints, and Mr. Cherrill communicated the details of his operations in producing the pictures in question to our Year-Book for 1870. On Tuesday night, Mr. Burgess, of Norwich, the originator of the eburneum process, exhibited at the Photographic Society a number of very pretty specimens of the same kind, produced, he stated, by the method described in the Year-Book. He expressed a decided preference for the carbon prints as compared with the developed image he before employed. The advantages will be obvious: besides the absolute permanency, there is no difficulty in securing a fine or uniform colour, and the delicacy and brilliancy of the pictures were superior.

There had been some little difficulties to overcome in manipulating before he secured complete success. The first consisted in the formation of minute air-bubbles between the carbon tissue and the collodion film, notwithstanding every care to expel them. He had finally come to the conclusion, and Mr. Johnson on consultation had agreed with him, that these bubbles were due not to air visibly entangled in the water, but to *air in solution*, which was expelled or disengaged by the temperature employed in drying the eburneum, and, not finding means of escape, formed the minute bubbles in question. He was confirmed in this view of the cause by finding that the use of distilled or boiled water was a perfect cure.

A second difficulty which troubled him was, at times, that of getting the completed picture to leave the glass. The application of wax, paraffin, resin, oil, &c., to the glass all failed in getting rid of the difficulty. At length he had come to the conclusion that it was caused by using the collodion film before it was absolutely dry. If any moisture was present in it when the gelatine was applied, it seemed to permit a trace of it to pass into the film and attach it to the glass plate, so that nothing could remove it perfectly. With the exception of these difficulties—now, he thought, overcome—he preferred thi process much to that of camera printing for securing the image for the eburneum picture. The result is, as he described, very pleasing, and is, we think, one well worthy of the attention of portraitists.

RAPID DEVELOPMENT PRINTING PROCESS.

At a recent meeting of the Photographic Section of the American Institute, in New York, Mr. Hallenbeck described a method of producing prints in dull weather which, in his own practice, he found yielded very excellent results. The formula is given by our Philadelphia contemporary as follows:—

Float plain paper three minutes on a solution composed of

Water	20 ounces
Bichloride of mercury	5 grains

Hang the paper up until thoroughly dry. Sensitize on a thirty-five-grain solution of nitrate of silver by floating the paper one minute. Expose under negative two minutes, then develop with

Water	10 ounces
Protosulphate of iron	350 grains
Glacial acetic acid	4 ounces

As the paper is very sensitive, it should be well protected from the action of light before exposure under the negative, and kept in the same careful manner after exposure until the process of development is fully completed.

In the discussion which followed, Mr. Chapman deemed the development of the image by an iron solution as a very important feature of the process, as many experimenters had failed in the use of iron solutions in paper printing.

Mr. Anthony thought that the success of the process might be attributed to the organic matter used in sizing the paper.

Mr. Dimmers stated that a very similar process had been published some years ago, and that a friend of his had worked it successfully in solar printing.

Finally, a committee was appointed to experiment and report at a future meeting of the Section.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Portraits of Greek Brigands—American Photographic Discovery and Progress—New Photo-Mechanical Processes—Paul Pretsch—Enamelling Cards—Free Trade in Photography—Societies.

Photography, like "poverty, makes a man acquainted with strange"—not bedfellows, fortunately—but companions. I have recently been looking over the album of a friend, where, in immediate proximity with the Bishop of Oxford, Mademoiselle Schneider, the Princess of Wales, and other celebrities and notorieties, were the portraits of two Greek brigands, which a young English engineer had recently brought from Athens. In answer to the question as to how he had obtained the photographs of the brigands, who presumably would not willingly voluntarily afford photographic aid to their identification, he replied, that they appeared to be perfectly well-known in Athens, and more than one cut-throat looking rascal had been pointed out to him in the streets as belonging to the brigands, who seemed to be regarded as a recognized but disagreeable body. The portraits in question were sold publicly as portraits of brigands, but as my friend had avoided a personal interview with them he could not positively authenticate the portraits as genuine. Some of the shop windows in London have during the last few days been made hideous with the photographs of seven ghastly heads of executed Greek brigands; but the grim contorted débris of humanity which these photographs represent are scarcely true representatives of even villainous Greek brigandage, although in more than one of these heads there are traces of a horrible beauty. The brigands in my friend's album are evil-looking scoundrels enough, but physically they are at least equal to several other Greeks of presumably respectable position, which I find in the same album. The realism of photography, however, takes away all romance, and presents the brigand as a coarse ruffian, with whom I should prefer an interview vicariously in an album to any personal meeting in or near once famous Marathon.

I am glad to see that Mr. Charles Wager Hull repudiates the remark attributed to him in one of the American journals, to the effect that the "Old World usually claims as their own whatever happens to be produced in the New." This being so, my friendly challenge to New World photographers, to state the claims to photographic discovery they possessed as compared to the Old, may be withdrawn. America has been always associated with the energetic prosecution of photographic enterprize, and in the early days of the art I think that our brethren across the water decidedly took precedence in excellence of English photographers in Daguerreotype portraits. How exquisitely crisp and brilliant were the examples which reached this country! And how irritating was the universal formula of praise from the non-photographic public! "How beautifully *clear* they are! I suppose it is the climate." Excellence our American friends still preserve, but I do not think that they surpass this country in their paper work as they did in the Daguerreotype process; nor does their progress in the art generally seem so rapid as in the early days of the art. It is not a little surprising to find collodion positives still hold a position amongst them of sufficient importance to justify the invention and patenting of a new black enamelled card, as a substitute for the glass plate and enamelled iron upon which ambrotypes have before been taken. Except amongst the most humble practitioners, collodion positives have long been entirely abandoned in this country without chance of revival. One thing in photographic progress may be fairly conceded to America: I mean the active enterprise which distinguishes it, and the manner in which it often makes a process succeed commercially which has languished or failed in this country. After much effort, Mr. Osborne failed to establish a commercial interest in photo-lithography in this country; in America he has achieved high success. The Woodbury process, which has made three commercial failures in this country, bids fair in America to make a gigantic success. The Sarony process of producing photo-crayons, which in this country made a very qualified success, is, I understand, progressing rapidly in America; and so with some other processes. If, therefore, our American brethren do not originate much in photography, they initiate successes which I should be glad to see followed out in this country.

I have recently seen further examples of the "Lichtdruck" process of Ohm and Grossman, and also something of a similar kind by Herr Obernetter, both exceedingly good; the latter with some very peculiarly excellent qualities. It is worth remarking that the two photo-mechanical printing processes producing the best results yet issued, both originated in Munich.

Speaking of photo-mechanical printing processes, I may, perhaps, be permitted—although it is somewhat late to revive the subject—to say a word in reply to Mr. Dallas *in re* Paul Pretsch. I have no wish to charge Mr. Dallas with detraction. I said that I thought him too sweepingly condemnatory of an unfortunate and absent man. But let that pass. I am asked, where are the wonderful plates and blocks by Pretsch which, untouched, yielded *good* prints? I answer, that in the Photographic Society's Journal for 1860 there is a photo-block print from a negative of an architectural subject, which is described as untouched, and bears no appearance of touching. This, although far from satisfactory in my estimation as a work of art, appears to me to be quite as good as the examples recently brought before the Society as specimens of improvments in photo engraving. Whether Mr. Pretsch is alive or dead I do not know;* but being, as we allk now, absent, and therefore undefended, and having been, as many know, an unfortunate man, it is well, I think, to be somewhat gentle in dealing with his memory.

I was amused at the complaint of a recent correspondent as to the uselessness of the instructions for enamelling card pictures, simply because he had failed in applying them. It is the old, old story: failure is always due to the process or the materials, never to the manipulator. I have tried the modes of enamelling described in your pages, both with mounted and unmounted prints, and have succeeded with both. I do not, however, like a glaze on a photograph equal to that on a French *bon-bon* box lid; but a fine glaze somewat less glaring and vulgar may be obtained by simply coating the mounted print with a very tough collodion, in the same manner as a glass plate is coated. This surface, when submitted to the pressure of a die, to secure the convex surface you recently described, gives a very fine solid effect. Collodion gives an excellent surface to carbon prints, for those desiring a glaze on their prints.

During the dull weather which has prevailed during our late exceedingly protracted winter, I have frequently found an old dodge of some slight service in saving time and producing good effects. When I have a very hard negative with crude contrasts, I am in the habit of exposing the paper to light for a short time, so as to slightly colour the whole surface, and so reduce, and harmonize in a slight degree, the harsh gulf between lights and shadows. This practice is, I think, often very valuable, and it has the sanction of an artist of the most refined taste and judgment: I mean M. Adam-Salomon. But the point I noted was this, that paper so exposed in a slight degree printed much more rapidly, and yet frequently gave prints with pure whites. In fact, the amount of tint which is produced in one printing, and which is bleached out by toning and fixing, is given to the paper before it goes into the printing frame, instead of prolonging the exposure in the frame in order to secure it, and a considerable amount of time was so saved.

I note that one of your correspondents recommends the formation of an association which will have the character practically of a trade union, seeing that one primary aim to be secured is the maintenance of prices; and he quotes a political authority for his idea that free trade is nearly played out. The politician in question is, funnily enough, not a Conservative or Tory, but a Radical: Mr. Odger. Mr. Bovey defends free trade, and points out the fallacy which underlies the principle upon which trade societies generally seem to act. He suggests, rationally enough, that since ability cannot be equalized, it is folly to suppose that remuneration should be brought to one level. One thing is, I think, clear enough: it is, that apart from any question of the relative truth of the principles of free trade or protection, it would be quite impossible to secure any union or combination amongst photographers to regulate prices. Every man will naturally get the best price he can for his work; and the price he can get will be regulated by the quality of the work, and the amount of demand and supply in his neighbourhood. Whenever a man reduces his prices it is a confession, in the first place, that he has insufficient patronage, and that his work is not sufficiently good to create a demand at the price already fixed. I think it is a great fallacy, in an art like photographic portraiture, to adopt the principles which Mr. Bovey advocates, expressed in the proverb about the nimble shilling. The demand cannot be indefinitely increased, no matter how low the rate of production; and the desire to earn a sufficient livelihood in lively shillings, instead of more slowly coming crowns, tends to that slovenliness of production which has been the bane of photography, the results often being so bad in art that their instability became matter of congratulation.

The meetings of the Societies have been interesting. At the Parent Society Dr. Anthony's paper describing a model studio elicited a brief but interesting discussion. Dr. Anthony's extensive information and fine taste gave much weight to his opinion. Dr. Mann's paper on an application of photography in producing stereographs of models of Mars was very interesting, although not strictly photographic. The conversational meeting at the South London Society on carbon printing and other incidental topics was more interesting and instructive than many of the more formal occasions. The youngest born of the societies, that of Bristol, continues to be one of the most active of the provincial associations, and its proceedings are always full of interest. The reports are so well worth reading throughout that I do not attempt to refer to them in brief abstract.

Foreign Miscellanea.

The *Petit Journal* describes a visit to an extensive manufactory recently established in Paris for making the celebrated *Susini* cigarettes. Before being shown round the works, visitors are ushered into a reception hall in which is situated a beautiful and very curious mirror, and this, attracting the spectator's attention, affords an opportunity for securing his portrait unobserved. On the visitor leaving the manufactory afterwards, a packet of cigarettes is offered for his acceptance, bearing upon the outside a copy of his own portrait, which has been printed and mounted in the meantime.

M. Bergamasco, of St. Petersburg, whose productions attracted some attention at the last Paris Exhibition, has of late been very successful in the preparation of cabinet pictures; some of these vie in excellence with the charming portraits of Reutlinger.

The Spanish Government have definitely refused to give up the *Tornado*, an English vessel captured some time since, or to give compensation to the owners. Our own Government have acquiesced in this decision, from the fact of its having transpired that the character of the vessel was more than doubtful, a circumstance proved beyond doubt by a photographic copy of the private instructions delivered by the owners to the captain, and which has been forwarded to the Earl of Clarendon for his information. This is one of the many important cases in which photography has been instrumental in affording proof of an undeniable character.

M. Davanne enumerates in his *Annuaire* the number of photographic societies at present in existence. According to his statement there are thirteen societies in England, five in America, four in Prussia, two in France, one in Austria, and one in India.

M. Niepce de St. Victor, Commandant of the Louvre, whose death was recently announced in these pages, made his first step up the ladder of fame by inventing a valuable colouring material, which was extensively employed for dyeing uniforms in the French service. A hundred thousand francs was offered for the invention, but Niepce de St. Victor made it a present to his Government. His researches upon the subject of light were made in the Paris barracks while actually on duty with his regiment, in which, however, he never attained a higher rank than that of captain.

The *Photographisches Archiv* thinks that too little attention is at present paid to the production of direct collodion positives, and that the essential qualities of these pictures, shortness of exposure and rapidity of preparation, are altogether overlooked. The *Archiv* recommends more applications of the method, the results of which are suitable for many purposes, and republishes some of the best known processes that have for some time past been set aside, and, indeed, almost forgotten.

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* Mr. Paul Pretsch is, we are happy to state, not dead. He is now resident in Vienna.—Ed.

M. Fuss, in the same journal, makes a few remarks on his experience of the "Lichtdruck." He says that in dealing with weak negatives, and printing them upon the gelatine plate, much working up of the image is requisite with the ink roller, to break up the grain and to give more vigour. Although preferring plate glass, he has tried that of ordinary quality, thick, and free from spots, the negative being taken on the concave side.

A proposition has been made in Vienna to establish a company, similar to the Autotype Company in London, for the purpose of working the Alberttype process.

Dr. Van Monckhoven, who has returned safely to Vienna, complains that in Germany, as also in Paris, his apparatus has been imitated and sold without any reference to his name.

M. Julius Kruger read an interesting and elaborate communication on the estimation of silver in sensitizing baths before the Vienna Photographic Society last month.

A fine art exhibition will open in Vienna under Government auspices on the 1st March, 1871; it will remain open for a period of three months.

M. Fink has patented in Austria a new sensitizing salt for use in the dipping bath. The first half-ounce is sold at the rate of five florins, but subsequent quantities may be purchased for ninety kreuzers (about one shilling and sixpence) per half ounce. It is said on good authority to consist of equal parts of nitrate of cadmium and nitrate of silver.

During the present year the following medals will be awarded for the encouragement of photographic discovery:—A large silver medal, by the French Photographic Society, for the best transparent pellicle that can be devised for the transfer of *cliches*; a large gold medal, by the Vienna Photographic Society, for the best dry process, as likewise two silver and two bronze medals for other deserving inventions. The Hamburg Society also promise medals for important discoveries.

M. Kleffel has given up the editorship of *Licht*, finding himself unable to perform any longer the arduous duties connected therewith. He took upon himself the responsibility of starting the journal as the organ of the Berlin Photographic Society, and, having now fairly established it, looks upon his task as complete. Dr. Stolze, the president of the Society, will in future edit the journal.

Photography has recently enrolled in its service a new compound, which appears to play an important part in the "Lichtdruck" process, viz, lupuline. It is produced by evaporating an alcoholic extract of the female hop blossom.

The Adam-Salomon portraits are gaining ground in Germany, and bid fair to become a favourite form of picture in that country. Among others, M. C. Sternberg has advocated the adoption of this style of portraiture.

That a trifling circumstance may have a very serious termination has recently been demonstrated in Vienna. An actress of that metropolis allowed herself to be depicted in somewhat *decollete* attire, but subsequently instructed the photographer not to strike off any copies from the negative after the proof print had been produced. Nevertheless, the pictures found their way into commercial circles, and thereupon the photographer applied for them to be confiscated. This was ordered by the Austrian tribunal to be done; but the matter did not end here, for the details of the law proceedings seem to have excited the risibility of a humorous journal called *The Flea*, which made itself merry at the expense of the lady in question. Further proceedings were then instituted, and the result was that the editor of the irritating periodical was sentenced to imprisonment for one month, and likewise to the payment of a fine.

A Westphalian paper mentions Count Munster as the originator of carte-de-visite portraits. The *Archiv* thinks, however, that the introduction of this form of photograph is really due to M. E. Delessert.*

The question of a copyright for photographic productions in Germany has been referred to a special committee of fourteen members, who are commissioned to report on the subject.

An analytical investigation into the various sensitizing compounds sold in commerce for admixture with collodion forms the subject of a communication from M. Poppe in the *Photographische Zeitung*; the paper testifies to the searching character of the research, the results of which should be very valuable.

At a recent discussion on the subject of silver printing at the Dresden Photographic Society, M. Krone laid down a somewhat dangerous rule, to the effect that silver prints should not be washed too much, either before or after fixing. After removal from the hyposulphite bath, washing in half a dozen waters M. Krone considers amply sufficient, the prints not being allowed to remain in the last water for more than three hours, when they receive a final rinsing, and are quickly dried. But little washing before toning is likewise recommended, prolonged immersion in water softening and disintegrating the paper too much, and causing the formation in the body of the material of silver and sulphur compounds, which, of course, militate against the permanency of the image. M. Krone does not specify the alternation of cold and warm water, which is successfully adopted in some studios where washing operations are conducted in a rapid manner.

The members of the Dresden Society have decided that in future any youths wishing to enter their service as photographers must serve an apprenticeship of three years, in order that they may become well grounded in the various manipulations.

The final report of the Groningen Exhibition Committee has just been published, from which it appears that the number of medals distributed was very large in proportion to the exhibitors. The numbers of exhibitors and prizeholders in each country were as follows:—Germany, 62 exhibitors, 18 medals; Netherlands, 29 exhibitors, 6 medals; England, 17 exhibitors, 7 medals; France, 7 exhibitors, 6 medals; Russia, 2 exhibitors, 1 medal; and Italy, 2 exhibitors, 3 medals.

Attention was recently called to the fact that in Berlin, nitrate of silver had been sold for photographic purposes containing an appreciable amount of iron. An enquiry was made into the matter, and it was found that a batch of this compound had accidentally become contaminated with the impurity in question.

A "Lichtdruck" print, of whole sheet size, a copy of a painting, was recently exhibited to the members of the Dresden Society. It was the largest print of the kind yet attempted, and elicited the universal admiration of the members.

CURIOUS FACTS IN MOLECULAR PHYSICS.

Mr. W. H. Harrison communicates to *Nature* what he conceives to be curious facts in a region of physics hitherto little explored. His estimate of the facts is, as will be seen, too narrow and incomplete. He says:—

"Some of the phenomena of photography present features of a very curious nature, yet seem to be very little known to philosophers who devote their time to researches in molecular physics. For instance, when a glass plate coated with collodion containing an iodide—say iodide of cadmium—is dipped into a 'bath' solution of nitrate of silver, strength twenty-five grains to the ounce, in from three to four minutes a good dense precipitate of yellow iodide of silver is formed in the spongy collodion film, and the plate is ready for photographic use. But let a plate be covered with collodion containing bromide of cadmium (ten grains to the ounce) instead of iodide of cadmium, an immersion of ten or fifteen minutes is necessary to obtain a good film of bromide of silver, though the collodion skin upon the glass surface is only of the same thickness as in the former instance; and not only is this much longer immersion necessary, but the nitrate of silver solution must be increased in strength to about sixty grains to the ounce to get the best results. When the strength of the nitrate of silver is only twenty-five grains to the ounce, the bromide of silver forms more on the surface of the collodion than within it, and sometimes breaks away in scales from the collodion, and falls to the bottom of the bath.

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* Hitherto, M. Disderi has been accredited with the origin; but we have in our possession one taken by Dr. Diamond as early as 1852.

"Lastly, let chloride of cadmium be used instead of the bromide in the collodion, the strength of the nitrate of silver must be increased to about one hundred grains to the ounce of water, and an immersion of thirty or forty-five minutes is necessary to get a good photographic precipitate of chloride of silver. In this case, when a weak nitrate of silver solution is used, an uneven precipitate is formed upon the plate, and the tendency to burst out of film in scales is seen as in the former instance.

"The three kinds of films just described vary in their photographic properties. The iodide of silver film requires the shortest exposure in the camera to produce a good picture, the bromide of silver film requires a longer exposure, and the chloride of silver film requires the most prolonged exposure to light of all.

"Again, the iodide of silver film is more liable than the others to spots and markings when there are particles of dust or other impurities on the glass plate or in the solution used; bromide of silver is not nearly so delicately ssnsitive to such disturbing influences; the chloride of silver film is even less sensitive in this respect than the bromide surface.

"The reason of the differences of time of exposure just mentioned may possibly be accounted for on the supposition that chlorine binds itself to silver with more force than is exerted by bromine, and that the action of bromine clings to the atom of silver with more tenacity than iodine clings to the metal. Hence the waves of light have more work to do in beating chlorine from silver than in beating iodine from silver. One very beautiful experiment, first made by Mr. M. Carey Lea, of Philadelphia, tends to prove that light will widen the distance between the hypothetical swinging atoms of iodine and silver, and that in darkness the atoms, with their attraction for each other thus partially overcome, will gradually fall together again. He prepared a film of absolutely pure dry iodide of silver, upon a glass plate, which film in the process of preparation had not been allowed to come into contact with the slightest trace of organic matter, in the washing water, or by any other means. On exposing such a film to light under a negative, and then applying what is known as the 'alkaline developer,' a picture came out; but if, instead of developing the picture, the exposed plate were allowed to rest a day or two in the dark, the latent image died out, the film, so far as is known, returned to its primitive condition, and on exposure under another negative, a picture from it could be brought out, with no trace of the image impressed for a time through the first negative. The alkaline developer seems to 'drink up' the iodine where its cohesion to the silver is loosened, thereby leaving a dark deposit of metallic silver; but where the light has not somewhat beaten the atoms asunder, the developer has no action, unless its strength be increased till it blackens the whole plate, whether the light has acted upon the film or not. The alkaline developer consists of a weak solution of pyrogallic acid, rendered alkaline by the addition of a few drops of carbonate of soda.

"This is but one instance among many of the facilities offered by photographic phenomena to those who are trying to peer into the penumbral philosophical region of molecular physics."

Besides ignoring the well-known fact that the rapidity of the double decompositions referred to is governed largely by the strength of the affinity in each case, the writer scarcely fully states the facts in relation to the relative sensitiveness of iodide, bromide, and chloride of silver. Such a statement cannot be made without many qualifying conditions. In the wet collodion process iodide of silver receives a latent impression capable of development more rapidly than bromide of silver or chloride of silver; but in dry-plate photography the conditions are altogether changed, and bromide of silver is found to be more sensitive than iodide of silver. Again, whilst chloride of silver is much less sensitive to light than iodide of silver to the action of light, so far as the production of a latent or developable image is concerned the chloride is much more sensitive than the iodide to the direct reducing action of light without the aid of a developer, the complete and visible reduction of iodide of silver by light being much less easily effected than that of either chloride of silver or bromide of silver. The subject generally, as Mr. Harrison observes, has hitherto received too little attention from both chemists or physicists, but in any examination of the subject it is important to bear in mind all the conditions which affect an estimate of the facts.

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PHOTOGRAPHY IN GERMANY.

BY DR. VOGEL.

Photography in Colours—New Discoveries Concerning Gun-Cotton—A Simple Outdoor Tent.

A continuous interest will at all times, I suppose, be felt in photographs in natural colours; but the aim of late has not been so much the reproduction of the natural tints by the aid of the camera-obscura, as the making of a set of negatives of the same object, which are afterwards printed on blue, yellow, or green carbon-paper, and transferred to the same sheet. The idea is not a new one, but has lately been brought prominently before the public by the labours of Ducos du Hauron.

The negatives which furnish the yellow prints are taken through blue glass; those which represent the blue tints are taken through yellow glass. How much of a negative we will get through a yellow glass every photographer will know without an explanation. But, to cut the matter short, the attempt has been made, and resulted in something, but not in perfection.

In the last session of our Society, Mr. Humutz proposed to have the negatives copied on stone; from these stones, prints can be made in the different colours in the ordinary manner of chromo-lithographs, and these would be real photo chromo-lithographs. The Society was much surprised when Mr. Burchardt, a well-known photo-lithographer, stated that he had already made such pictures, and that they had become articles of trade. He produced three large photo-chromo-lithographs. The process is curious enough. The pictures were copies of water-colour drawings. The negatives are not taken through coloured glasses, but simply by varying the time of exposure. Suppose the picture contains four colours besides black—yellow, green, vermilion, and blue. These colours have various times of exposure. With a very long exposure, black will be the only colour that has not impressed the sensitive film; all the other colours will be over-exposed, and will appear in the print the same as white. A print taken from this negative will give all the black outlines and black parts of the picture; this picture, transferred to stone, is, of course, printed with black ink. If we shorten the exposure a little, black and yellow will fail to make an impression—*i. e.*, the others will be over-exposed. This picture is now transferred to stone, and printed with yellow ink; that the yellow also prints over the black makes no difference. In a similar manner we obtain the negative for green. This colour would overlap the yellow and black parts, and would, where it overlaps the yellow, be rather annoying; but we can help ourselves by printing the green first, and then the yellow with an opaque yellow, which would cover the green completely.

A little intelligence and knowledge of colours are necessary; but that the thing can be done has practically been proved by Mr. Burchardt. The only real difficulty which he met was in reproducing the blue, and the blue parts he had to draw in by hand.

These are the first practical results of the experiments that have lately been undertaken in this direction, and, with skill and intelligence, an important future may be in store for this new invention. I hope to be able to send you specimens for the exhibition.

Next in order, I have to refer to discoveries which throw a new light on our knowledge of collodion. Every photographer knows how widely different the collodion from the same factory is at various times: to-day it dissolves easily, a year hence it dissolves with difficulty; to-day powder, in a month fibrous; sometimes yielding a spongy, at other times a horny film. Nobody has taken the trouble to study more closely the cause of these variations. We accepted it in good faith that gun-cotton is a chemical compound, which, like many other chemical compounds in the organic world, changes somewhat in its qualities. Lately, however, M. Camuzet has communicated to the French Society that gun-cotton is not a chemical compound, but a mechanical mixture. If we take the very best cotton, dissolve it in alcohol and ether, and pour the resulting plain collodion in water, we will find that the cotton will separate in three parts: a flaky one, which will rise to the top; a powdery one, which will settle at the bottom; and a third part, which will dissolve in water. Gun-cotton soluble in water! Who would have thought it? And the most curious part is that the soluble part is quite considerable. M. Camuzet dissolved four samples with the following results:—

	Flaky part.	Powdery part.	Soluble part.
No. 1. Best collodion,	0·31	0·15	0·54
„ 2. Ordinary „	0·27	0·13	0·60
„ 3. Powdery „	0·27	0·07	0 66
„ 4. Papyroxyl „	0·60	0 05	0 35

The flaky parts, when dried, will burn like the best gun-cotton, and redissolved in alcohol and ether will furnish a good collodion. The powdery part can be heated until it is charred to blackness without explosion. It dissolves poorly in alcohol and ether, and gives an indifferent film. The soluble part, and which in some samples amounts to more than fifty per cent., has not been examined by M. Camuzet. It is more than probable that the excellence of gun-cotton is proportioned to the amount of flaky matter; and this would not only give us a means of determining the quality of a sample by dissolving a part of it in alcohol and ether, and by throwing it in water determine the quantity of flaky matter, but we can also get rid of all obnoxious substances, and get a chemically pure preparation. Such a preparation is of the greatest importance for photographers. Every one knows how variable the quality of collodion is, and what curious results these variations produce in our baths and on our plates. It is very probable that the part which is soluble in water is a "mixtum compositum" of various substances, such as dextrin, sugar, perhaps oxalic acid, xylodin, &c., all of which bodies act more or less injuriously on the bath and the sensitiveness of the film.

What would a careful photographer not give if he could get rid of all these impurities? Another curious circumstance we must not overlook. How is it that the soluble substances are not removed by the frequent washing that the cotton is subjected to? We must suppose that in water the insoluble parts of the fibre form a membrane around the soluble parts, and prevents their removal.

The circumstance that papyroxyl furnished the largest amount of flaky matter, and consequently the best collodion, we must explain by stating that the fibre is mechanically much torn in making the paper, and this facilitates a more complete penetration of the nitro-sulphuric acids.

We hope that our manufacturers will take advantage of this new discovery.

In conclusion, a few remarks on new inventions in landscape photography. From the beautiful collection of landscapes taken in the Sierra Nevada, California, which you were so kind as to send me, I see with much pleasure that with you landscape photography is as much practised as with us. An important article in this branch of the art is the tent, which, on the one hand, must be light and portable, and on the other strong and solid. Herr Kluizer, in Brannar, has constructed a tent for short excursions, which stands on a tripod, the feet of which can be drawn out or pushed together. When fully drawn, they are about seven feet long. Over the three feet of the tripod a cloth is drawn, made of some stuff impervious to light. From the top to three and a-half feet down, the cloth is nailed to the legs of the tripod; the balance falls loosely to the ground. A window of about eight square inches, made of yellow oiled silk, is sewed in. The table is three-cornered, and is fastened in the feet of the tripod by hooks and eyes. The table can be folded, and contains a groove for the bath, and another one for a dish with water. The whole affair is set up in a moment, and as soon folded up again.

Experiences of an Experimentalist.

ENAMEL PAPER IN PHOTOGRAPHY.

BY W. GRUNE.

My first work in the province of photography was the elaboration and invention of an enamel paper which for several years enjoyed considerable reputation; its imperfect production, however, by imitators, subsequently rendered it unpopular, and eventually led to its falling into disuse. The method adopted by myself, by means of which the paper was perfectly coated with an exceedingly fine white material (sulphate of baryta, or blanc fix), which was so completely incorporated with the paper that the latter became proof against the effects of water, acid, alkali, ether, alcohol, and other like fluids, without, however, hindering these liquids from penetrating the surface, was so simple in its character, that any one could carry it out and prepare the paper for his own use.

The description of paper to be employed for the purpose is the glazed paper used by lithographers and engravers, and which readily becomes sodden in water. This material is floated upon a solution of albumen (half white of egg and half water), and, after being in contact for a few seconds, removed and dried. A sufficiently large iron saucepan is then taken, containing a small quantity of hot water (say one inch deep), and over the sides of this vessel is strained a piece of coarse linen, and then a piece of flannel. Upon this flannel are laid the dry sheets of prepared paper, and these are then covered up with another piece of flannel. The water is now made to boil, but only allowed to remain in that condition for a few minutes; the steam evolved percolates through the fabrics and the papers, and, without damping them in any way, coagulates the albumen. The operation of coagulation thus renders the material at once solid and stable, for the albumen is not only upon the surface of the paper, but has penetrated through the white pigment with which the paper was previously coated.

In preparing paper of this description on a large scale, apparatus would, of course, be employed in which whole sheets of paper could be exposed to the action of the steam at once. The finished material is manipulated, after further treatment in a suitable albumen and salt solution, in the same manner as ordinary paper, and yields, in printing, pictures so exceedingly fine and brilliant as are scarcely to be surpassed in sharpness and delicacy even by collodion prints.

ON CLEANING GLASS PLATES.

BY W. GRUNE.

During my prolonged labours in connection with the production of positives with wet collodion, for the preparation of caustic photographs, decorations, diaphanous pictures, xylophotographs, &c., on a large scale, I have learnt to appreciate the worth of well-cleaned glass plates. In no other studio, do I think, are more plates used than in my own, some of them being employed several hundreds of times; and I therefore proceed to describe my method of glass cleaning, not as a new chemical process which has not yet been tried and approved, but as one which has rendered good and practical service in my hands.

Beyond the employment of the chemical agents, the necessity of the lapse of a certain amount of time, as likewise the equal distribution of the cleaning materials, is an important condition of success. This distribution I bring about in a somewhat original manner, and thus prevent the difficulties met with when wet plates lie one upon another; in this latter instance the cleaning material is unable to surround the glass perfectly, and bubbles, or even dry places, are sometimes found between the glass surfaces. My method of overcoming these difficulties is to employ the cleaning compound not in the form of a solution, but in that of a soft paste or batter, in which the plates are laid or arranged.

In the first place, I treat the collodionized and varnished plates with a dilute solution of ammonia, piling them up one upon another, and, after the lapse of a few hours, the film then readily washes off in water. The plates are then placed in a mixture made up of—

Caustic soda or potash	3 parts
Water	100 ,,

Chalk, sufficient to make a thin paste.

In a vessel containing this compound the plates are laid, one after another, the consistence of the mixture preventing the close adhesion of the glass surfaces, and allowing of a film of the mixture to remain between each plate. After allowing the plates to remain for a period of four hours, or, if more convenient, through the night, they are taken out washed in clean water, wiped, and subsequently immersed in another mixture, made up of—

Sulphuric acid	4 parts
Water	100 ,,

And so much levigated pipeclay as is necessary for the production of a thin paste.

After immersion for a few hours, the plates are again well washed in water, and rubbed dry with a clean cloth or with filter paper, and are then ready for a final polish with alcohol and a little collodion.

If, after the last immersion and washing of the plates, the latter are allowed to dry in the air, instead of being rubbed dry with a cloth or with filter paper, defects are apt to arise on employment of them; if it is impossible, for want of time, to dry the plates as indicated, they should be left in water until a more convenient opportunity.

If the cleaning mixtures are made sufficiently thick, there is no need of any special apparatus for any of the above indicated operations; for manipulating the caustic soda mixture a linen rag affixed to a stick is most convenient, and for the sulphuric acid compound an ordinary brush is the best.

Before employment, all the mixtures should be thoroughly well stirred.

MANIPULATIONS IN JOHNSON'S CARBON PROCESS.

We have from time to time given information as to the improvements and modifications in the carbon process, which have been suggested by continued experience to its practical workers. We now place before our readers, in a succinct form, the fullest details for working as furnished by the Autotype Company in a practical manual just published. It is unnecessary to enter here into an examination of the history or principles of the process, as the majority of our readers are fully acquainted with these. We commence at once, therefore, with

The Manipulations.

1. *Sensitizing the Pigment Paper.*—Dissolve one ounce of *pure bichromate of potash** in twenty ounces of *water*; or, instead of the pure bichromate, the *Autotype sensitizer* may be used, with the advantage of obtaining increased sensibility, and the power of keeping the sensitized pigment paper unchanged for a much longer time than when the ordinary chrome salt is used.

Pour some of this solution into a shallow dish, larger than the paper to be sensitized, to the depth of one quarter of an inch. Take a piece of pigment paper, lay it face downwards upon a clean surface, fold back one edge to the extent of a quarter of an inch, and then roll up the remainder with the gelatine film outside. Now drop the angle of the folded edge upon the solution, and let the coil unroll itself, which it will do slowly, driving out all bubbles behind as its surface comes into contact with the fluid.

In warm weather, two minutes will be found sufficient to cause the gelatinous surface to absorb sufficient of the bichromate to penetrate the mass equally, and three minutes' time may be given in cold weather; but whatever time for floating be allowed, each piece sensitized must have the same treatment, or they will not be equally sensitive. After floating the required time, a lath or thin slip of wood should be laid across the dish, and the dry folded edge should be pinned to it; the whole should then be raised, and hung up to dry.

The temperature of the sensitizing bath should not be above 80° Fah. If this be exceeded, powdered ice must be placed in a second dish below that containing the bath; or a little fresh bath must be prepared, ice being substituted for water, and an equivalent quantity of the finely powdered sensitive salt added to the existing bath.

2. *Drying the Sensitized Pigment Paper.*—The drying of the paper is one of the most important operations of this process. This arises from the fact, *that the time occupied in drying the tissue materially affects its sensitiveness, its solubility, its cohesion, and its power of adhesion to other surfaces.*

Moreover, during the drying, and while in a moist state, the component parts of the pigment compound are peculiarly liable to the action of other agents. Thus, if gas be burnt in the room in which the wet paper is hanging, the products of combustion act as reducing agents upon the chrome salt; and insolubility is induced when these products are in small quantities, and actually produced when they are in excess, thus seriously affecting the resulting sensibility and solubility of the pigment paper. This may arise from the sulphurous acid, formed by the combustion of the bisulphide of carbon, which gas invariably contains. Sulphuretted hydrogen, or sulphide of ammonium, has also a very deleterious action; as even the emanations of a water-closet, placed at some distance from the drying pigment compound, have been proved to be injurious.

It therefore follows that the more quickly the sensitized pigment paper can be dried, the more successful will be the subsequent operations. The exposure is then not so short as to prevent its being properly adjusted. The exposed paper, when dried quickly, is more easily developed, and the masses of gelatine forming the picture are solid and firm, and adhere with great tenacity to the support, whether temporary or permanent.

If the paper has been long in drying, its sensitiveness is so increased that the exposure becomes unmanageable. The pigment compound is, then, much less soluble in warm water, yet the developed picture has no cohesion among its particles, which form a sort of slimy mess rather than a firm, tenacious jelly, and leave the support, sometimes entirely, as a slime; sometimes partially, in blisters; or in innumerable small pustules.

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* The commercial salt invariably contains traces of free acid, which cause insolubility in the sensitized pigment paper.

It will be obvious from these remarks how great a boon has been conferred upon photographers by the introduction of the new pigment paper of the Autotype Company, which, although highly soluble in excess of water, yet, when containing less of that fluid than is sufficient to saturate the colloid bodies of the pigment compound, may be heated to nearly 100 degrees, without becoming fluid and running in streaks; whereas it is well known that the tissue compound prepared by the process of Swan cannot be heated to 70 degrees without becoming fluid, and leaving the paper upon which it has been prepared.

All that is necessary with the new pigment paper is to float it in the sensitizing bath for not more than three minutes, and to hang each sheet to drip until all have been prepared; then to suspend them in a box or closet, in which heat can be gradually applied, either by closed hot-water pipes or vessels, or by a pipe passing through to the box or closet, and heated by gas externally, taking care that the fumes do not pass into the closet, for, as the pigment paper is much more sensitive than the former tissue sold, it is the more easily affected by the products of combustion; and, indeed, by all reducing agents.

Of course, both the sensitizing and the drying should be done in a darkened room by candle-light, or in a room with windows provided with yellow blinds; all white light must be carefully excluded.

Formerly, great care was necessary to prevent the tissue becoming moist and tacky after drying, or becoming so dry so as to be brittle. With the new pigment paper these precautions are not necessary, for while much less hygrometric than the old tissue, it cannot be made brittle. Containing oily pigment in notable proportion, and not affected by heat or moisture, the paper remains flexible, however well dried. Consequently it is much less liable to yield imperfect pictures, and therefore all special treatment on this ground is unnecessary.

(To be continued.)

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PHOTO-MECHANICAL PRINTING PROCESSES.

BY LIEUT. J. WATERHOUSE, R.A.

[We resume our extracts from Lieut. Waterhouse's report on the photo-mechanical processes used on the Continent.]

Chromo-Photo-Lithography in Holland.

The details of the process of chromo-litho-engraving are as follows:—

For maps, five stones will be required—three for the colours, one for the hill shading, and one for the detail in black and names; for works in monochrome, one stone only is required, but the manner of preparation is the same.

The surface of the stone is made as level as possible, and carefully grained and polished; it is then washed with a saline solution of—

Chloride of calcium	8 parts
Water	100 „

When this is dry it is washed in the dark with a solution of—

Nitrate of silver	12 parts
Distilled water	100 „

It is exposed to light under a reversed negative, then fixed with a concentrated solution of hyposulphite of soda, and well washed with water till all traces of the hyposulphite are removed.

After this, it is well polished with powdered oxalic acid rubbed on with a pad. The strong lines on the coloured stones are then engraved and inked in. It is now covered with a thin coating of a composition of asphaltum and wax, made by dissolving one part of wax and four parts of asphaltum in sufficient turpentine to give it about the consistence of treacle. A little of this is poured on the stone, and is made even with a lithographic roller, the greatest care being taken to get an even coating, so that the diamond point may act uniformly. This coating is then allowed to harden by being exposed in broad daylight for a day; it is extremely thin, so that the colour of the stone is scarcely altered, and the photographic design is quite visible through it.

The stone is then placed in the ruling machine, and the whole varnished surface is ruled with fine lines in two directions, so as to form a regular cross-hatching. The lines are extremely fine, and are about the hundred and fiftieth part of an inch apart; the diamond point is so adjusted that it only cuts through the varnish, leaving the stone bare, but not cutting it The parts intended to remain quite white are varnished with a strong varnish composed of benzine and asphaltum. When this is dry, the first biting in is given. The composition of the acid solution for biting is—

Nitric acid	16 parts
Alcohol	60 „
Rain water	3,500 „

The first biting in with this solution continues three seconds; when it is washed off with plenty of water, the stone is dried, and those parts which compose the first or lightest tints are covered over with greasy ink (for this the ordinary autographic ink is used, but made rather thick); the second biting in is then given; for this the same acid solution is used, but it is allowed to act for a longer time. The parts which form the second gradation of shade are then covered over in the same manner as the first; the third biting in is then given, and so on, always using the same solution, but allowing it to remain longer each time. Thus, for the ten gradations of blue tints for the water, the successive durations of the bitings in are—3, 5, 8, 12, 16, 20, 25, 32, 38, 60 seconds. These bitings in also do for the parts representing woods, &c., the shades of blue being combined with shades of yellow to form the different shades of green. The number of shades on the blue stone of a specimen I have is about fourteen, on the red five, and on the yellow seven.

It will easily be seen that by combining these three stones a large number of primary, secondary, and tertiary tints will be formed, sufficient to answer every purpose.

When the etching is finished, the stone is treated in the same manner as an ordinary engraving upon stone, and is inked in with the pad.

The stone for the hill shading also receives a photographic impression, followed by the application of the varnish. The hills are then engraved in the ordinary way, and are printed in brownish neutral tint.

On the stone for the work in black, the canals, woods, boundaries of plantations, &c., are drawn with a pen. In order to obtain the names in their proper positions, a photograph is printed from the reversed cliche used for printing on the stones, on to the *reversed* side of a piece of ordinary albuminized paper; the design shows clearly through to the proper side of the paper and in its right position. The glazed side of the paper is then covered with a thin and even coat of starch and gamboge, as used for the ordinary lithographic transfer paper, and ruled to secure the parallelism of the words; the names are then stamped, one at a time, each in its proper place, by means of a small hand-press, with ordinary type, contained in a small brass box fixed in the place of the usual stamp. When all the names have been thus printed, the sheet is transferred on to the black stone in the usual way. This stone is printed the last of all, which gives more clearness and legibility to the map.

This method has also been adopted for printing the names on the maps engraved on stone in the ordinary way instead of engraving them, which took a great deal of time, and occupied the best engravers.

The method of producing the engraved stones for the reproduction of the photographs of artillery materiel is the same. The depth of the bitten parts in the darkest shades is considerable. The effect produced is an exact imitation of the original photograph, but with the advantage that the draughtsman has it in his power to render visible the details in the deepest shadows, which are generally entirely lost in the photograph. The reproduction of such subjects requires a much more skilful draughtsman than is required for the map work. Notwithstanding this, these extremely beautiful proofs are produced at a very cheap rate, and sold to artillery officers at 1½d. per copy.

Photo-lithography.

Photo-lithography is not used to any great extent, but I was told of a process which I think is capable of giving good results, and differs in some respects from the ordinary processes.

It is as follows :—

Ordinary albuminized paper is floated on a solution of bichromate of potash, dried in the dark, and exposed to light under a negative ; it is then washed in cold water till the bichromate is removed. After this the print is treated with a solution of muriate of ammonia, which dissolves the unaltered albumen ; it is again washed with water, and then, while still moist, is inked with a roller and transfer ink : the ink only takes on the lines where the altered albumen has remained, and thus the design is in greasy ink and fit for transfer. They have not been very successful with the process, as the lines are found to spread very much, which is, however, probably owing to the use of too soft an ink, or the transfer being made too soon. The process is somewhat more simple than those usually practised, but I do not think it possesses any other advantages.

Correspondence.

PHOTOGRAPHING CRIMINALS.

Dear Sir,—Your remarks upon the article in the *Daily News* (evidently written by one of those gentlemen who enlighten the public upon subjects they themselves know very little about) recalls to my mind an incident that occurred in my own experience, which will go to prove to the writer in question that there are more ways than one of effecting the purpose required.

Seven or eight years ago (if I remember rightly) two men commenced in the north of England by stealing a few sheep, and increasing the flock by the same means as they came south. By the time they arrived in London they had what a Yankee would call a pretty considerable quantity. They sold them, and got away with the cash for some days, when they were taken by a detective officer (his name, I think, was Dovey), and lodged in Shrewsbury Gaol, in the neighbourhood of which town some of the sheep had been stolen. To ensure the conviction it was necessary that they should be recognized by people in the various parts of the country through which they had passed on their way to London, and the idea occurred to the detective to have them photographed. He came to the establishment I was then engaged in, and, being the only person that could be spared, I was (as a soldier would say) "told off" for the job. On the way to the gaol with the detective, he was very anxious in his enquires as to how I was going to manage it. I remember I did not give him very hopeful replies, as I did not at the time feel very hopeful myself about the matter ; and I was still less so when, arriving at the prison, I was told that the prisoners must be taken without their knowledge. I asked one of the warders if there was any place where I could see them without being seen myself, and he told me there was a peep-hole that over-looked the hard-labour yard. There we went, and I found it just the thing ; it was between two high brick walls, about the height of a man's head from the ground, and about five inches square, with a sliding shutter, and overlooked a large gravelled yard. I placed the camera with the lens in the hole, and the developing tent was pitched near. One of the warders was moved about till I had got the right place, and the place where he had stood was marked by kicking a little of the gravel away. The plate was then prepared, and a warder sent for prisoner No. 1, while another stood so as to cover the peep-hole with the lens, with the understanding that he was to move aside at a given signal. The detective stood in such a position that the prisoner looking at him presented a three-quarter face to the lens. When he was upon the spot marked, he was halted, and the detective, speaking in such a manner that it at once riveted his attention, said : "Now, look at me, sir ; I have had a letter from your friends." I did not stay to hear more, for the exposure was over before he got to "friends" (it being in the open air). The plate was developed as quickly as possible, and the signal made that it would do. The prisoner was taken away, and the other brought to be served in the same manner. The results, although only carte size and full length, were good enough to be recognized by the parties who had seen them with the sheep in various parts of the country, and, no doubt, assisted in their conviction.

I may here remark, for the information of the writer in the *Daily News*, who seems to think that criminals, like babies, are all alike, that the elder of the two men—who, it seems, was the prime mover in the affair—was a white-headed, white-bearded, very respectable-looking old man, while his dupe, the man who had driven the sheep to London, was one that would be condemned by his looks : his eyes were always cast down, and, in many other respects, he was not at all the sort of person one would care to meet in a lonely lane after dark.

In the same place, another dodge was resorted to with equal success. This time the criminal was brought to the studio, and knew what was to be done, and while the exposure was going on he contorted his face in a most horrible manner. Two or three times the plate was spoiled in this way. On the third, the operator gave some directions to his assistant out of hearing, and came out of the dark room with an empty dark slide. He went through the same performance, focussing, exposing, &c., and the prisoner went through his performance as usual, contortions, moving, &c. The photographer closed the lens with every manifestation of annoyance and impatience, and went into the dark room as before, as if to develop, when the prisoner, resuming his natural expression, was photographed by the assistant from behind a screen, and an excellent negative obtained. So the prisoner went away with the warders, quite satisfied that he had done the photographer, little thinking how he had been done himself.

There are, no doubt, many ways of obtaining good results that would suggest themselves to photographers that may have this not very pleasent job to do, but I think the best plan would be for each prison to have its own photographer. Say that one of the warders was taught photography ; he would be upon the spot when anything of the sort was wanted, and would have many an opportunity of doing it that would be denied to a photographer sent for, perhaps, at a very short notice ; at all events, the difficulties, though many, are not insurmountable, as the writer seems to think, and any detective officer could (if he would) give a satisfactory answer as to its utility.

Apologizing for taking up so much of your space, I beg to remain, yours truly, George Croughton.

Proceedings of Societies.

Photographic Society of London.

The usual monthly meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, May 10th, Mr. J. Glaisher, F.R.S., in the chair.

The minutes of a previous meeting were read and confirmed, and the following gentlemen elected members of the Society :—Messrs. W. de W. Abney (Aldershott), Mr. J. Giberne, and the Rev. J. Richardson.

The Chairman read a letter from Dr. Diamond, enclosing one he had recently received from Mr. Paul Pretsch in answer to certain statements recently made at the Society and in the journals. The letter of M. Pretsch, having only just been received, would be laid before the council, and then read at the next meeting. Dr. Diamond, in forwarding the letter, was able to confirm the statements as to many of Mr. Pretsch's photo-engravings being untouched.

Mr. W. T. Morgan exhibited some fine coloured enlargements on opal glass.

Mr. Burgess, of Norwich, exhibited some fine examples of carbon eburneum prints.

Mr. Henderson exhibited some very beautiful enamels, plain and coloured.

The SECRETARY announced that in the absence of Mr. Hughes, whose engagements had not permitted the completion of his experiments, Mr. England had kindly prepared a paper on comparative experiments with dry plate processes, which he would now read. This paper will appear in our next. (See Leader, p. 217.)

The CHAIRMAN, in inviting discussion, called attention to many fine photographs on the walls of the room, forming part of an exhibition of architectural pictures.

Mr. GORDON made a few observations, the purport of which will be found on another page.

Mr. H. COOPER was able to confirm the remarks of Mr. England as to the unsuitability of iron development for gum-gallic plates after keeping, whilst alkaline pyrogallic acid gave, under such circumstances, good results. He had found that diluting the gum solution reduced the tendency to blurring.

Mr. GORDON said that this was true, but it also reduced keeping qualities. He referred to the excellence of the results he had obtained by giving Fothergill plates a final wash of morphia.

Dr. MANN had never seen anything so fine in dry-plate photography as the results of the process to which Mr. Gordon had just referred.

Mr. ENGLAND said that morphia and albumen gave very perfect results.

Mr. F. ELIOT suggested the importance of using a strong bath for preparing dry plates, and asked Mr. England the strength of his.

Mr. ENGLAND used a forty-five grain bath.

Mr. P. LE NEVE FOSTER asked how much bromide in the collodion, as the greater the proportion the stronger the bath should be.

Mr. ENGLAND used three grains of bromide in each ounce of collodion.

Mr. ELIOT used a sixty-grain bath, and thought that strength desirable.

Mr. DAVIS asked if Mr. Gordon washed much when morphia was used.

Mr. GORDON washed thoroughly.

Mr. DAVIS found that if a preservative were used in the Fothergill process containing a definite quantity of silver, the final wash of gallic acid would not cause hardness, especially if the exposure were slightly lengthened.

Mr. COOPER asked Mr. England's experience of the keeping qualities of the three processes he had described after exposure, as in some processes—the tannin, for instance—the image gradually disappeared if kept long before development.

Mr. ENGLAND always developed as soon as he could, and had not noticed.

Mr. HOWARD testified to excellence of gum-gallic process, and referred to some plates, which were much knocked about in travelling, which yielded good pictures on development six weeks after preparation. The sensitiveness was extreme. On one occasion he was interrupted during exposure, and had to close one lens after five seconds' and the other after ten seconds' exposure, but both halves of the plate yielded good negatives on development with alkaline pyro a month subsequent. As a rule, however, he thought dry plates best fitted for architecture and similar subjects, and it should be borne in mind that good light and well-illuminated subjects were absolutely necessary to good results.

After a vote of thanks,

Mr. BURGESS gave some details of his eburneum carbon prints. They consisted of carbon prints produced by Mr. Johnson's process on glass, and backed with gelatine holding zinc white in suspension as in the eburneum process, and finally stripped as in the old process. Mr. Cherrill and himself had talked of the matter when they met at the exhibition last November, and agreed that whichever had time to try it first should communicate with the other. Mr. Cherrill had applied it, and very successfully first. He had communicated details of the process to the YEAR-BOOK OF PHOTOGRAPHY, and he (Mr. Burgess) had simply carried out the process there described. The quality was finer, more delicate, and of better colour than developed prints, and the operation was more certain.

After a few remarks by Mr. Burgess on the difficulties of the process, and some other conversation, the proceedings terminated.

Talk in the Studio.

MR. CAREY LEA'S COLLODIO-BROMIDE PROCESS.—We have been favoured by Mr. Carey Lea, of Philadelphia, with some examples of his most improved form of the collodio-bromide process. They consist of whole-plate landscapes. The scenes are well chosen, and the artistic treatment gives them value as pictures, whilst the technical qualities materially add to this value. They are at once brilliant and delicate, and possess a softness, harmony, and atmospheric effect very rare in dry-plate work. The excellence of the result speaks volumes for the process as well as for the skill of the photographer.

SEIZURE OF PIRACIES.—A correspondent informs us that on Thursday, the 28th ultimo, Detective Serjeant Russell, of the City police, accompanied by two officials of the Stereoscopic Company, Cheapside, visited the premises of a travelling dealer in photographs, of the name of Day, at No. 4, Mount Pleasant, East Road, N., and removed therefrom a large number of photographs, being piratical copies of copyright photographs, the property of the Stereoscopic Company.

ENAMELLING MOUNTED CARD PICTURES.—A correspondent at Cannes, referring to this subject, mentions that the touching, if necessary, should be effected with a lead pencil or a lithographic pencil, in order to prevent the retouched portions being removed by moisture when the card is applied to the combined film of gelatine and collodion on the glass. He points out that if one end of the wetted card be placed in contact with the enamel film first, and then steadily laid down and pressed with a squeegee, there is not much danger of air-bubbles. He also sends us an example of a card finished by a collodion varnish which has been poured on as in coating a plate. The collodion has had, apparently, a little of some resin added.

THE ROBBERY AT MR. MAYALL'S STUDIO.—We recorded a short time ago some details of a systematic robbery of negatives, chemicals, prints, &c., from Mr. Mayall, at Brighton. The prisoner, Henwood, was convicted, but a point was reserved which was recently brought under the consideration of the justices. The case is reported thus:—"The prisoner was indicted for stealing, while in the service of the prosecutor, a quantity of negatives and other property belonging to a photographer, and particularly the photograph of a lady. He was tried before the Recorder of Brighton. The property was found at the prisoner's lodgings, but there was no evidence to show when the articles were taken or when they were missed. The counsel for the prisoner called upon the prosecutor to elect. The counsel for the prosecution abandoned the case as to the photograph of the lady, but contended that as regarded the other articles the taking was continuous. The point reserved was whether the conviction was right. Mr. Besley, for the prisoner, urged that the photograph of the lady had been taken by command of the Queen, who had directed the artist not to part with that photograph, so that no copy might be taken, and this it was alleged the prisoner had taken. The prosecutor was therefore put to his election. This had therefore been excluded, and with that exception there was nothing to show when the other articles had been taken. The prisoner was therefore embarrassed in his defence, as he could not tell how to account for the different articles found in his possession. The Court held that there was nothing to show that the articles had not been taken at one and the same time. Conviction affirmed."

ENAMELLING MOUNTED PRINTS.—A correspondent sends the following method, which may, he suggests, help "An Irish Photographer." He says:—"I will give 'An Irish Photographer' and others similarly situated a process that is at once both simple and efficient in its results. After the cartes are mounted and dry, pass them once through the rolling press; take, then, the carte by the corner (as you would a glass plate), and pour the collodion over it, and stand it up to dry, and, in about half-an-hour, again pass the carte through the rolling-press, and you will obtain a surface like burnished steel. Cabinet pictures may also be coated in a similar manner, but beyond that the card would be too large to manage. Any good plain negative collodion will answer the purpose, but those sold for enamelling purposes that I have tried are useless, as they dry opaque. Colouring of cartes is wonderfully improved by the above enamelling process, and indifferent prints can be made to pass muster; and, if it is thought desirable, varnish of the crystal kind can be poured over the surface like glass, which possibly may add to the preservation of the prints. Enamelled cards for mounting are the best. This is a process that I have followed for years, and can always obtain good results without trouble; and if 'An Irish Photographer' and others similarly situated try it they will have no cause to complain. Enclosed is a sample carte.—Yours respectfully, T. Tedrake." The example forwarded has a very fine surface; not quite so glossy, however, in its polish as those enamelled with a film of collodion and gelatine combined, in which the high surface is secured by the contact with plate glass.

Photographs of the Greek Brigands.—The *Times* says:—"Amid the horror caused by the accounts of the recent atrocities by the Greek brigands, it has been with a kind of savage satisfaction that the public has learnt that some at least of their number have met with the condign punishment they had so wickedly earned. The name of brigand has long been associated with ideas of heroic bearing and romantic generosity; but the mercenary and brutal wretches who perpetrated the recent horrors have dispelled those fictions. A photograph published by the London Stereoscopic Company will also assist to show what the brigands of Attica really are. It is a representation of the heads of the seven villains who were shot by the soldiers, and afterwards decapitated. None of them appear to be very young, and the majority are of middle age. In two instances the faces are disfigured by wounds, but in others the ordinary aspect remains. One is positively fearful in its ugliness, but several are only noticeable for the truculence displayed on them. One head, with matted hair obscuring a low forehead, impresses the beholder with the idea that in life the man who bore it would never have shrunk from cruelty nor listened to an appeal for mercy. The youngest faces are the least repulsive, but all of them are of the lowest type, and indicative of savage greed. The photograph, ghastly as it is, possesses an attraction at the present moment which will render the likeness of these seven ruffians as the most sought after of any of those which are to be found in our London shop-windows."

Limit to the Use of Retouching.—Herr Grasshoff, after describing his method of retouching negatives, concludes thus:—"But I must remark here that it is altogether impossible to make a satisfactory picture from a bad negative, with whatever delicacy the retouching may be performed, and I must dispel all those illusions in the most distinct manner, if it is supposed that a splendid negative can be produced from each bad plate that may be presented, by simply polishing up by negative retouches."

Double Bottom in Washing Troughs.—Photographers know the importance of preventing prints resting on the bottom of the washing trough, where the greatest proportion of hyposulphite is, on account of its greater density, necessarily found. Mr. Bookhout uses a bed of pebbles at the bottom of the trough. He says, in our Philadelphia contemporary, that "by means of the pebbles the prints are drained pretty thoroughly every fifteen minutes. I have tried perforated zinc. The result, after a few weeks' use, was white spots on the prints. There was no mistake about the cause. I varnished it and had none, but as soon as the varnish wore off they appeared again. I tried this for over a year. A net made of twine gave me yellow spots (hypo). Wooden slats also gave me hypo spots. But the pebbles are the thing—easily washed, and unobjectionable in every way. I use white pebbles, because I can get them easily, and prefer them on account of their hardness. I have used this over a year. My work is mostly commercial, and I make a great many pictures, and, notwithstanding my tub sometimes has a great deal of paper in it, it always comes out clean, which is more than I can say of anything that I have before used."

To Correspondents.

⁂ We have to claim the indulgence of some of our advertising friends whose announcements are compelled to stand over, owing to the pressure on our space. Last week several advertisements were, from a like cause, omitted from our columns. Under such circumstances we are, however unwillingly, compelled to leave over the latest received announcements.

H. F. (New Lenton).—We could have judged much better of the character and cause of the result of which you complain if you had sent us an example. Even a print might have suggested the nature of the defect. Excess of intensifying is often a cause of the granular, coarse deposit of which you complain.

Tear-away.—For cleaning old plates the preparation suggested by Mr. Carey Lea, consisting of an ounce of bichromate of potash dissolved in a pint of sulphuric acid, answers as well as anything we know. We have personally, however, a very great objection to the use of old plates when it is important to secure perfect negatives. 2. We do not know where you can purchase bamboo or other canes.

C. M. (Belfast).—Your specimens on linen are very good. There are various ornamental purposes, such as hand screens, to which such things can be applied, but although several processes of photographing on linen, silk, &c., have been published, none have been applied commercially. We regret that we have not time to write private letters in answer to photographic questions from correspondents.

Spero.—We should prefer the glass joined flush, and the design will, we think, answer very well. Nine feet high will be sufficient. The opaque space at each end, as in the larger design, will answer. An angle of about 45° is best. Let the room stand east and west, so as to have a direct north side light. All the glass in the roof should be continuous. It will be easy to govern the amount of front light thus obtained by blinds.

One who Tries.—The uneven mounting of your lens is undoubtedly a defect, but the extent of the evil will be best ascertained by trying. 2. We prefer rice starch to dextrine for mounting photographs.

Enamel.—The only work on producing photo-enamels is one in French by Geymet and Alker. It treats of the process in which a sticky surface is obtained by a mixture of albumen, sugar, &c., and bichromate, in order to cause ceramic powders to adhere. As a rule, those who have worked out the processes practically are indisposed to communicate to others what they themselves have worked out in practice. Most of the instructions give sufficient details of principles, but you may naturally expect to have to work out some technical details of a comparatively new process. We avail ourselves of all the attainable information for the benefit of our readers. 2. Mr. Lea has kindly furnished us with some examples of a recently improved process, and they are very excellent indeed. We cannot tell you why the collodio-bromide process is not more practised: probably because the material requires to be prepared by the operator himself, whilst in other dry processes the collodion can be purchased ready for use. 3. We regret the prolixity to which you refer, but cannot control it. 4. Mr. Gordon does not always use a preliminary coating, but when he does, he employs india-rubber. It is, on the whole, the safest you can use. 5. In the exchange communications to which you refer, we presume each writer does his best. We are glad you appreciate the cream. Thanks for excellent prints.

G. Richardson.—The orthoscopic lens and the orthographic lens are both of the same construction; one is manufactured by Voightlander, and the other by Ross. They were introduced about a dozen years ago as a great improvement on the single landscape lens for architectural purposes. It is not, however, entirely free from distortion, and has been comparatively superseded by the triplets, doublets, and rectilinear lenses now manufactured.

Portrait Lens.—There are different modes of using the front lens of a portrait combination for landscapes, different makers adding different contrivances for fixing the lens. A common method is to remove the back lens, and then screw the front lens in its place, the back surface being placed in front.

D. Welch.—The most probable cause of the spots is minute air-bubbles forming on the print whilst it is in the hypo. Are you quite sure it is not that? Have you examined both sides carefully? If not that, it may be the result of some defects in the paper.

G. Bruce.—Thanks. We will try the paper, and report shortly. The specimens of the new paper are exceedingly fine. Thanks for sight of the other specimens. They are very fine indeed, and we are glad to see them. We will return them shortly. The other packet shall be forwarded at once.

B. L. J.—It is possible to work with a very weak nitrate bath, but the plate will require to remain a longer time immersed, and the tendency will be to lack of vigour. For wet plates, with ordinary commercial samples of collodion, a bath containing from thirty to forty grains per ounce will answer satisfactorily. For dry plate work, with a collodion containing more bromide, a stronger bath is better. As a rule, the more highly salted the collodion the stronger should be the bath.

J. Girault.—Thanks. When a collodion varnish is applied to a finished print it is usually a plain, tough collodion, without any addition. The example you forward appears to have had, however, a resinous addition. Several resins would answer. Canada balsam would dissolve readily in the collodion, and would give it a hard, tough surface. Either this or gum mastic would answer well. In either case, the application to the photograph should be made in a moderately warm room, to prevent the effect of chilling or drying somewhat opaque, which an alcoholic solution of a resin is liable to if applied cold.

M. Carey Lea.—Received. Thanks. We will write soon.

W. Blair.—Thanks. We will duly report after trial.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 611.—*May* 20, 1870.

CONTENTS.

PAGE
The Theory of Carbon Printing ... 229
Concave Backgrounds ... 229
Sizes of Photographs ... 229
How to Produce an Enamel Surface on Paper Photographs. By an Old Hand ... 230
Proposal of a Standard System of Plate Sizes. By Dr. Liesegang ... 231
American Correspondence ... 231
The Proposed Photographic Observation of Venus ... 233
Manipulations in Johnson's Carbon Process ... 233
The Chemistry of the Carbon Process. By J. W. Swan ... 234
Remarks on the Dry Plate Processes. By W. England ... 235
Photo-Mechanical Printing Processes. By Lieut. J. Waterhouse, R.A. ... 236
The Purification of Gelatine. By Dr. J Stinde ... 237
Correspondence.—Gumming Masks to Negatives—Retouching Desks ... 238
Proceedings of Societies.—South London Photographic Society. 238
Talk in the Studio ... 239
To Correspondents ... 240
Photographs Registered ... 240

THE THEORY OF CARBON PRINTING.

The Action of Light on Chromated Gelatine.

Correct theory, if not essential, is at least conducive to successful practice, and those of our readers interested in carbon printing will therefore read Mr. Swan's re-statement of the theory of the action of light on bichromated gelatine with interest. The theory there stated is not new, as it has more than once been published before, but it was originally due to Mr. Swan's investigations, no rational explanation of the reactions following the exposure of a film of bichromated gelatine to light having been published before the result of Mr. Swan's researches had been announced. The prevalence still of vague and incorrect notions of the reactions in question afford a sufficient reason for the clear and explicit re-statement of the facts given in Mr. Swan's paper.

Amongst the various erroneous theories as to the cause of insolubility in gelatine which has been mixed with a bichromate and exposed to the action of light, one of the oldest still seems to prevail in some minds. It is known that chromic acid, when mixed with a body like gelatine, is readily decomposed by light and by other causes, giving up oxygen, and it is, in the erroneous theory to which we are referring, supposed that the oxygen liberated combines with the gelatine, which is so rendered insoluble. Mr. Swan has proved, however, in the course of his experiments, that the gelatine, so far from being rendered insoluble by oxygen, is rendered again soluble by oxygen, bodies like peroxide of hydrogen, which readily give up oxygen, restoring the solubility of gelatine, which, by exposure to light in conjunction with chromic acid, has been rendered insoluble. Mr. Swan has further proved that the gelatine is rendered insoluble, not by the liberated oxygen, but by combination with the chromic oxide formed by the decomposition or reduction of the chromic acid. The proof of these two positions is simple: in regard to the latter, it is found that the addition of a basic salt of chromium to gelatine at once produces insolubility; and in regard to the former it is found that gelatine so made insoluble by combination with oxide of chromium may be again made soluble by treatment with a suitable oxidizing body which will destroy the basic character and restore the acid character of the chromic compound.

Some interesting experiments have recently been in progress in different hands with a view to prevent the tendency to decomposition of chromic acid and chromates mixed with gelatine, and so producing spontaneous insolubility in the latter. Mr. Johnson finds that the use of perfectly pure bichromates, and, still more, the use of the neutral chromates, checks this tendency; and Mr. Spencer has recently shown us prints produced on pigmented paper eighteen days after its sensitizing on a bichromate solution. In the latter case the continuance of solubility was attributed to a minute trace of cyanide of potassium, which had been added to the bichromate solution; but whether the preservative action thus exercised was due to the neutralizing of free chromic acid, or to some action of the cyanide not yet traced, remains to be determined. Mr. Johnson has found that pigmented paper floated on a solution of pure bichromate of potash, dried with moderate rapidity, and then kept in the dark perfectly dry, retains its sensitiveness and solubility for a very considerable period.

CONCAVE BACKGROUNDS.

Accompanying the letter of our esteemed American correspondent this week, we have received two of the most attractive cabinet pictures we have ever seen. The subjects are beautiful girls, with features and expression so charming that it would have been difficult to have made them other than winsome by the worst of photography; but here they are rendered with the most perfect technical skill and rare artistic taste, by Mr. Kurtz, of New York, one of the most able and cultivated photographic artists in the New or Old World.

The especial object with which they are forwarded to us, however, is to illustrate the value of Mr. Kurtz' new concave background in giving a fine gradation of light and shade on the background of the picture. Nothing can be better than the result as here illustrated. Portraitists who are familiar with the value of light and shade know that nothing is so destructive to the feeling of space, relief, and atmosphere in a picture as a plain, flat background, of one uniform, even tint throughout, and that nothing more satisfactorily tends to relieve the figure from the background than the presence of broken tints, or light and shade on the background. By the use of a concave background this result is most admirably secured. As will be seen on a moment's reflection, the character of the background of such a form may be varied largely by the angle at which it presents itself to the principal light. If the interior of the concave be also graduated in depth of tint, and the cone made to revolve on its centre, any gradation of tint required may be brought near the face. The suggestion will, we doubt not, be found useful by many portraitists.

SIZES OF PHOTOGRAPHS.

Photography is usually regarded as an eminently progressive art, and in many respects with good reason. In some matters it has been, however, essentially conservative. The standard sizes of its pictures, fixed originally on a purely arbitrary basis, to meet the conveniences of the moment, have remained, with trifling modifications, as standards to the present day. The original sizes of Daguerreotype plates for portraits, fixed in France, were the whole-plate, half-plate, quarter-plate, one-sixth-plate.* The terminology of these sizes is still retained, and for small sizes still indicates a standard. In larger sizes, however, a bewildering variety in proportion has gradually acquired position in different countries. In one respect perfect conservancy of spirit has been maintained: in the original sizes no special plan of proportion was observed; and in the modifications and extensions of size which have grown into use an equal want of system prevails.

Some months ago Dr. Liesegang proposed to remedy the discrepancy which existed, causing much inconvenience alike to photographers and photographic manufacturers, and at the same time aimed to introduce a definite system of proportion in the various sizes. Adopting the five by four plate as a standard of symmetrical proportion, he proposed to maintain that relation between height and breadth through all the plates. The result would be that in all cases the height of the plate would be just one-fourth more than its breadth: thus a plate eight inches broad would be ten inches high; one ten inches broad would be twelve and a-half high; one twelve inches broad would be fifteen inches high, and so on in proportion, as detailed in Dr. Liesegang's article in another page, to which we refer the reader. In order to secure universality, and so promote the facilities for international trade in cameras, mounts, frames, and other belongings of photography and photographs, Dr. Liesegang proposes that the standard sizes should be based on the metrical system of measurement, which is now adopted on the Continent generally, and also largely in this country and in America in scientific calculations. This would at first involve some slight inconvenience to English manufacturers; but that would be soon overcome, and it is clear that if a universal system have to be adopted, the sacrifice in convenience must be made by the minority, consisting, undoubtedly, of those who use the English standard of measure.

That a uniform standard is desirable, and that in forming such a standard some carefully considered system should be adopted, in which symmetry and convenience are combined, cannot be doubted. Whether such a result can be secured by common consent without any general conference is more doubtful. There is no common authority, no common source of appeal amongst photographers, no general deliberative or legislative body. The representative photographic societies which exist rarely give subjects of this kind attention. The journals, partly as pioneers, and partly as the means of intercommunication between those interested, have generally had the chief influence in securing general consent to good measures and beneficent customs in connection with the practice of the art. The introduction of the cabinet portrait was first mooted and advocated in these pages, and the new size has now become universally adopted, with general advantage and satisfaction; and if photographers generally are sufficiently interested in this question, it will not be difficult to secure by their aid general, if not universal, acquiescence in a well-considered system.

Before deciding on a new standard, several points should receive careful attention. The first consideration should be fitness, beauty, symmetry; the second, convenience. Both these points have received attention in Dr. Liesegang's proposed standard, which possesses also the advantage of having already obtained the acquiescence of some leading German firms. We must confess, however, that our own personal taste would have led to the adoption of proportions still less square than those proposed. Instead of the height exceeding the width by one-fourth, we should have preferred it to exceed the width by at least one-third. The chief defect, in point of proportion, which characterizes the present standards is, we think, that in some cases the form is already too square. That this strikes many persons of taste we have often had evidence. It has been the common remark of persons examining the portraits of Adam-Salomon, as compared with some fine English ten by eight specimens: "But how much better in proportion and size the French picture is!" The only actual difference is, that M. Salomon's pictures are ten inches and five-eighths by eight inches and a quarter; but this slight difference in the proportion has generally been noticed as strikingly in their favour.

Another important consideration in relation to fitness in size is the difference between the proportions suitable for portraiture and those for landscape photographs. As a rule, the best proportion between the length and breadth in the latter is not the same as for portraiture. Nothing is more clumsy-looking, nothing less natural-looking, than a square landscape. The eye naturally, except under special circumstances, embraces a much larger proportion of a scene laterally than vertically, and since the introduction of wide-angle lenses into photographic practice, the production of pictures very much longer in proportion to their height than the usual portrait plates has become a favourite custom, which would not readily be abandoned by landscape photographers; and hence any proposed universal system must make provision for a series of sizes of a character which has, with good reason, acquired popularity. The second question which affects the convenience of cutting up the photographic sheet will also in any new scheme require consideration, and may easily be arranged so as to secure greater convenience and less waste than prevail with the sizes at present in use.

We commend a consideration of the subject, and of Dr. Liesegang's remarks, to our readers, and shall have pleasure in receiving any comments or suggestions thereon.

HOW TO PRODUCE AN ENAMEL SURFACE ON PAPER PHOTOGRAPHS.

BY AN OLD HAND.

A few months ago I should have thought that an article on the above subject would require to be prefaced by some apology, unless there was anything new to be brought forward; but seeing a few enquiries in the News for information leads me to think that the matter cannot have been fully ventilated.

On making enquiries, I find that many more of the enamelled cards are produced by country photographers than by London houses. Country photographers, as a rule, at once jump at novelties. To account for this would be somewhat difficult. What I am about to show is how easy, and without failure, it is to produce photographs on paper with an enamel surface second only to a vitro enamel, or a carbon print backed with Burgess' eburneum compound.

In the first place, get some squares of glass (patent plate is best, any size—small ones are easier manipulated). After washing and drying, rub over the glass some bee's-wax and turpentine, or bee's-wax, beef suet, and turpentine, equal quantities, melted together in a gallipot. This will keep any length of time covered up, and may be used as a furniture polish, if necessary. Care must be taken to cover every part of the surface of the glass, otherwise the picture will adhere, and no amount of coaxing will detach it. When the wax is rubbed off—or, I should say, apparently rubbed off—coat the plate with plain collodion. Care must be taken in selecting a sample of collodion that will dry quite transparent. A collodion giving the slightest opalescent appearance should never be used for enamelling cards. When the collodion is perfectly dry, which it should become spontaneously, the plates are coated with gelatine one part, water twenty parts; soak the gelatine in cold water for fifteen minutes, then add the hot water. When the gelatine is thoroughly dissolved, strain through a piece of flannel, and it is ready for use. The photographs may be immersed in the gelatine, and laid at once against the collodion plates, and allowed to dry. This I consider the best, as the paper gets thoroughly saturated with gelatine, and no air or gases can reach the photograph, which, consequently, is very permanent; or the collodion plates may be coated with the gelatine, and, when dry, they are ready for use at any time. To enamel the cards after spotting and mounting, immerse the mounted cards in water for a few seconds, to prevent them curling, then lay the collodion-gelatinized plate, prepared side uppermost, in a tray of water; pass a wide, soft camel-hair brush along the surface several times; this will make the water take more kindly to the gelatine, as well as remove air-bubbles from the surface (minute air-bubbles adhere to gelatine when under water, and are sometimes difficult to remove); lay the card against the plate; lift both up together; drain the loose water; put two or three thicknesses of blotting paper at the back, with a weight on the top. After about an hour, the blotting-paper may be removed, which will allow the air to get at, and more rapidly dry, the print. On no account must the picture be removed until you are sure that it is thoroughly dry. Run a knife round the print, and catch the corner of the picture with the point of the knife, when the card will immediately detach itself from the glass; sometimes the prints will drop off themselves. To spot or retouch the prints so that they will stand water, rub up with a muller on ground glass some powder colour, black, blue, and lake, with a few drops of spike oil of lavender. This colour will work better a day or two after it is prepared, and, when it gets too thick, may be thinned down with fresh spike oil.

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* The sizes thus designated were as follows:—

22 by 16 centimetres, or about 8¾ by 6¼ inches
16 „ 12 „ „ 6¼ „ 4¾ „
11 „ 8 „ „ 4¼ „ 3¼ „
8 „ 7 „ „ 3¼ „ 2¾ „

These sizes were, with slight modifications and additions, adopted in England and elsewhere. In America some of the modifications were curious: the half-plate was, for instance, 5½ by 4¼ inches. A ninth size was subsequently generally adopted.

This is one of the best vehicles for touching that I am aware of; it dries almost directly; the touches are waterproof, permanent, and glossy.

If the above is not sufficiently clear, I shall have pleasure in answering any questions.

◆

PROPOSAL OF A STANDARD SYSTEM OF PLATE SIZES.

BY DR. LIESEGANG.

The comfort of the amateur and photographer travelling in foreign countries, as well as the international trade in photographic goods, make the adoption of a uniform system of plate sizes very desirable.

At this time we have at least a dozen of different systems of plate sizes in the different countries. England has its own, so have France and Italy. In Germany every manufacturer of photographic apparatus has his own sizes; and the most curious thing is, that there is not one rational system—*i.e*, where the height of the plate has a given proportion to its width.

In England we find 8½×6½ in. the whole plate, 6½×4¾, 4½×3¼, 3¼×2¾, and 2½×2 for its sub-divisions. Is there any system to be found in these measures? We ought to give up the old Daguerreotype dimensions. The "plaque normale" is too small for our actual exigencies. The larger sizes in use are not better than the small ones. The English dimensions are—

10×8 in.	12×10 in.	14×12 in.	20×18 in.
11×9 in.	13×11 in.	18×16 in.	22×20 in.

The first size has a very good proportion—that of 5 : 4 ; but in the last one we come nearly to a square.

In Germany the largest sizes are 20×16 and 24×20 in.; this corrects their square form.

In France the following sizes are in use:—10×13, 13×18, 18×24, 21×27, 24×30, 30×39, 36×42, 40×50, 50×60 centimetres. Here we have proportions of 3 : 4, 4 : 5, and 5 : 6.

If a universal system be adopted, it ought to be based on rational principles. Height and width of each plate-size ought to stand in the same relation. We must base it on the French measure of length—the metre—which is now accepted on the whole continent, and which certainly will be adopted one day or other by all other countries.

The proportions of 5 : 4 I consider the best for a photographic plate. It makes also the best oval. The plate of 10×8 in. gives an example of this proportion. For these reasons I proposed, in July last, the following standard sizes:—

10 × 8 cent.	25×20 cent.	45 ×36 cent.
12½×10 ,,	30×24 ,,	50 ×40 ,,
15 ×12 ,,	35×28 ,,	60 ×48 ,,
20 ×16 ,,	40×32 ,,	100×80 ,, &c.

A few of the German leading firms have adopted these sizes, and find that they work well. A plate of 60×48½ in. may be cut into the sizes of 45×40, 40×32, 30×24, 20×16, 15×12, 10×8 without any loss; and into the other sizes without the least possible loss. This is a great advantage of the new rational system. The plates are called by their height only—*i.e.*, a plate of 30×24 we call a thirty-centimetre plate, &c.

Elberfield, May 14th, 1870.

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AMERICAN CORRESPONDENCE.

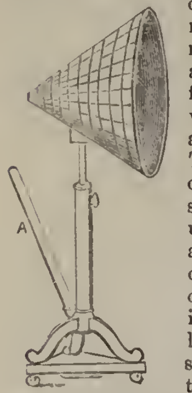
The Light, and How to Manage It—Analysis of Nitrate of Silver—The "Berlin Process," Why so Called—Save the Negatives.

It is very apparent, when comparing the photographs of to-day with those made one, two, and three years ago, that much more attention is being given now by photographers to the lighting of the model than formerly. The day of harsh contrasts, flattened faces, and black shadows under the eyes, nose, and chin is about over. Photographers generally have learned not to tolerate them; and they have been taught, moreover, that while the light of the sun is their best friend, it is also their worst enemy when in the wrong place.

The attention was first turned to the glass house. Old ones were re-modelled, and new ones erected all over the world. The photographic journals were full of drawings and plans and descriptions to aid in the good work, and improvement was visible. Given a good studio, then, the next step was, how to manage the light that enters it, in order to secure the best effect upon the model. This is what now occupies the photographic mind in this country. About a year ago some very effective pictures were made by two of our eminent photographers—Messrs. Kurtz and Baker—which they dubbed "Rembrandt Style," or "Shadow Pictures." They were new to our fraternity, and excited a great deal of admiration. They were so widely different from what was then the general run that they attracted attention at once to the matter of lighting, and since then there has been a very decided improvement in that direction. Roundness and softness are now the order of the day, and quite a number of devices have been introduced to assist in driving the light where it was wanted in order to catch the coveted effects.

One or two of these devices it may interest your readers to have described.

The first is a *Cone Background*, introduced by Mr. Kurtz, of New York. Last autumn, at the Annual Exhibition of the American Institute of New York, some pleasure boats were exhibited made of *papier mache.* They were very light and airy, and yet strong. While looking at them, the thought occurred to Mr. Kurtz that there was a capital opportunity for him to work out an idea that he had conceived of a cone-shaped background. He applied to the manufacturers of the boats, and persuaded them to make him what he desired. I have seen the result in operation, and can speak of it in the highest terms of commendation. It is a ponderous-looking affair in the studio, and presents almost as imposing a front as doubtless did the windmill to Don Quixote. The background proper is a *papier mache* cone six feet in diameter, and three feet deep from the base or mouth to the apex or back. It is mounted on its side upon a sliding rod, made to raise and lower on a stand like an ordinary head-rest. The stand is fastened to a wooden platform supplied with castors, and the whole is moved about by a long handle at the back. The interior of this great cone is painted or sanded of any desirable shade, and serves as the background. Now place it under the skylight, and seat your model almost in its great mouth. It will at once be seen that any light coming from one side must illumine that part of the interior farthest from it, and, per contra, leave the nearest side in comparative shade. By turning it full to the light there is no shade, and you get a very light background; and, upon turning it from the light, you get it almost black if you wish it so. The light on the models, however, will be the reverse of that upon, or rather in, the background; *i.e.*, the side towards the light will be illuminated, but admirably relieved by the dark portion of the background; and the shadow side of the model as well relieved by the lighter side of the background. No matter from what direction your subject is lighted, the background immediately assumes the opposite lights and shades, and an extraordinary relief is at once obtained. By a little judgment and management it can be made exactly suitable for all complexions; and, in the case of a group of two, the darker person should be placed against the lighter portion of the background. I enclose you examples of one or two of the effects secured by its use, and also drawings of the device, if you see best to append them. So numerous and variable are the effects obtainable with it that it must become very popular.



The next contrivance I have to describe is a very useful reflector, the idea for which was given me by Mr. M. M. Griswold, of Columbus, Ohio. It is concave in shape, thirty-six inches in diameter, and made of one sheet of tin, hammered into shape and afterwards planished. It swings on pivots within a frame just large enough to admit of adjusting it to any angle. The frame carrying the reflector runs up and down like a window-sash within another frame about six feet high, which stands on legs like a background-frame, thus enabling one to throw the light up or down as the case may require. Many pretty effects may be produced by it by throwing over it pieces of tarleton or gauze of various colours when the light is strong. For example: for a round, smooth, light face and light hair, a buff colour gives pretty shades, and greater strength or contrast in the negative; for sharp features, sallow or tanned, a blue colour is useful, &c. The use of this simple apparatus is very easily perceived.

Analysis of Nitrate of Silver.—Although photographic chemicals are perverse at times, they often get censured for producing failures that are more frequently the effect of dirty fingers and careless manipulations.

A case in point: some of our New England brethren believed recently that they were not producing as good pictures as they should, and strongly suspected that the nitrate of silver that was being furnished them by their dealers was not of that degree of purity which it should be. The New England Photographic Society accordingly appointed a committee to analyze several samples of nitrate of silver from our most prominent manufacturers, and report the amount of adulteration they found therein. The result is curious and interesting. The committee prepared two sets of examples, and numbered them from one to six. One set was given to a practical chemist, Mr. Babcock, and the other to Mr. Chas. E. Munroe, of the Lawrence Scientific School. Shortly after Mr. Munroe handed in his qualitive analysis, which he had obtained with the spectroscope. From this it appeared that bottle No. 1 contained—besides nitrate of silver—soda and a trace of copper; bottle No. 3—soda, potassa, and lime; bottle No. 4—soda, potassa, and lime, all slight; bottle No. 5—soda, potassa, and copper; bottle No. 6—soda and lime.

At this time the committee were not aware how delicate a test was this spectroscope analysis, and expected that the quantitative analysis of both parties would bear it out, and when they received Mr. Babcock's report they were very much surprised that he should report "no trace of nitrate of potassa in any of the samples."

MR. BABCOCK'S ANALYSIS.

Bottle	No. 1.—	100 grs.	of sample	gave	99 50	grs.	pure nit.	of sil.
,,	No. 2.—	,,	,,	,,	99 26	,,	,,	,,
,,	No. 3.—	,,	,,	,,	99 26	,,	,,	,,
,,	No. 4.—	,,	,,	,,	99.72	,,	,,	,,
,,	No. 5.—	,,	,,	,,	99.50	,,	,,	,,
,,	No. 6.—	,,	,,	,,	99.	,,	,,	,,

All perfectly neutral except No. 2 sample, which was slightly acid.

No trace of nitrate of potash in any of the samples.

MR. MUNROE'S ANALYSIS.

Bottle No. 1.—100 grains sample gave 99.94 grains nitrate of silver, slightly acid. Impurities—soda, and trace of copper.

Bottle No. 3.—100 grains sample gave 97.40 grains nitrate of silver, neutral. Impurities—soda, potassa, and lime.

Bottle No. 4.—100 grains sample gave 100 grains nitrate of silver, neutral. Impurities—soda, potassa, and lime, all slight.

Bottle No. 5.—100 grains sample gave 99.90 grains nitrate of silver, neutral. Impurities—Potassa, soda, and copper.

Bottle No. 6.—100 grains sample gave 99.72 grains nitrate of silver, slightly acid. Impurities—soda and lime.

Mr. Munroe said, in his report:—"I have subjected the samples to the most delicate tests, using the spectroscope in the qualitative analysis, which will explain the riddle in the fourth bottle, where we obtain by quantitative analysis 100 per cent. This instrument will show us the presence of the $\frac{1}{180000000}$ part of a grain of common salt."

The Society were quite happily disappointed at this result, as they fully expected to find a large percentage of adulterations or impurities in some of the samples.

The report is considered a triumph for our manufacturing chemists, and a deserved one, for I am glad to say that we rarely meet with any adulteration in photographic chemicals in this country.

The "Berlin Process," why so called.—I see the "Berlin Process" is attracting a good deal of attention with you; and I also notice that the German photographic journals have entered a disclaimer, professing to know nothing of the origin of the new "dodge." Of course they do not, for it is an American institution—or, rather, notion—and is called the "Berlin" process because, as I have probably before stated, the results resemble the fine cartes-de-visite heads we have been getting here from Berlin. It is, then, most truly named a "dodge," for it dodges the true plan of producing exquisite pictures.

Apropos of this, I was informed to-day that if the ground side of the glass be coated instead of the smooth side, first albuminizing the same, the stippled effect would be much more perfect and pleasing. I have not yet tried this.

Since writing the above a correspondent informs me that he made negatives on ground glass twelve years ago, and published the idea. He abandoned its practice on account of the high price of ground glass. In making further experiments recently he finds a great saving of time in the exposure, ten seconds being enough to expose as fully as thirty seconds would an ordinary glass. This rather surprised him, and suggested the idea of backing-up the negative with a piece of blue glass. The result was the same as with the ground glass, so far as exposure is concerned. I have not tested this either, but give it you thus early that your readers may themselves see what there is in it.

Save the Negatives.—Many good negatives are ruined by ratches from the finger nails, made when removing the int from them after printing, but oftener by the sharp rners of the albumen paper. My friends the Kilburn os., the eminent stereoscopic publishers, at Littleton, N.H., ve taught me a plan to effectually prevent all such loss d injury. They have a strip of steel, say one-sixteenth of inch thick, screwed to the table, edge up; over this they aw the cut strips of albumen sensitized paper, face down. esult: all the sharp edges are removed. It is a valuable ea, and they declare it has saved them many valuable gatives.—Yours truly, **Edward L. Wilson.**

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HE PROPOSED PHOTOGRAPHIC OBSERVATION OF VENUS.

N the 25th ult. M. Faye called the attention of the mem-ers of the *Academie des Sciences* to the method proposed y M. Paschen to observe the passage of Venus by means photography.

M. Paschen's proposal is to have recourse to two photo-aphic stations, so placed as to be 125 or 140 degrees from ie another, and at about equal distance from the portion the terrestrial parallel at which Venus will culminate to nith. In this way the longest possible periods for simul-neous photographic observations will be obtained. The ree couples of stations cited by M. Paschen as being suit-ole for observations in 1874 are:—

1. The islands of Chatam and Mascate.
2. The islands of Chatam and Bassora.
3. The island of Samoa and Port Mahé in the Séchelles.

Thirty images, it is believed, may be taken during the vo hours, thus furnishing thirty equations upon which alculations may be based.

M. Paschen does not propose to take his pictures at the ocus of the object lens, as was advised by M. Faye, but y means of a second lens of short focus, which will photo-raph the planets and the reticule at the diaphragm of the elescope at the same time. The results will be more recise, it is believed, than any yet attained by ordinary stronomical instruments, and the risk of error but very mall.

M. Faye concluded by saying that "photographic obser-ations are, without doubt, one of the best known methods f determining the solar parallax. I am happy, for my art, to have been the first to call the attention of astro-omers (in 1852) to this beautiful application of photo-raphy. M. Paschen's well-digested memoir leaves no oubt as to the value of this mode of working; and if stronomers again in 1874 make use of Halley's method of bservation, it will be merely out of respect to previous bservers, and not in the hope of obtaining a result com-arable to that to be obtained by the aid of photography."

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MANIPULATIONS IN JOHNSON'S CARBON PROCESS.

3. *Preparing the Negative.*—Select a negative of medium ensity for the first trial. If it be of the exact size of the it pigment paper, paste round its edge on the film side ur strips of very thin black paper, one-eighth of an inch ide, or more, so as to cut off the light from that part, and form what is called the "safe edge."

If the negative be larger than the pigment paper, lay er the face of the negative a piece of black paper, and it of it cut an opening to show the portion of the subject be printed. This must be smaller than the pigment iper, which, *in all cases*, should have an edge unacted upon light, of at least one-eighth of an inch in breadth; one-uarter of an inch, or even one-half, is still better. This edge, thus preserved in the soluble condition, greatly increases the adhesion of the exposed pigment paper to the support, and materially facilitates the succeeding operations.

4. *Placing the Sensitive Pigment Paper under the Negative—The Printing Frame.*—Having thus prepared the negative, lay the sensitized paper face downwards upon it, and place both in the usual frame; though as the print has not to be looked at, a piece of thin wood or mill-board, held by two American clips, answers perfectly. The model pressure frame of the Autotype Company, however, represents the most perfect form of apparatus for effecting the exposure, and is the result of much experience. It is extremely light, simple, and comparatively cheap; while the necessary operations of changing the paper are greatly simplified. Great care should be taken to keep the printing frames dry. If much hygrometric moisture accumulate in the pads or cushions, this will be converted into steam in sunlight, and will inevitably soften the pigment compound, causing it to adhere to the negative, which may thereby be destroyed. The paper, being properly adjusted in the frame, is now ready for exposure.

5. *Exposing the Pigment Paper—The Actinometer.*—Simultaneously, and in the same plane with the pressure frame containing the negative and pigment paper, the actinometer must be exposed. The simplest actinometer, and that adopted by the Autotype Company, consists of a slip of paper rendered sensitive by a standard quantity of silver salt dissolved or suspended in collodion. This is poured or painted upon the paper, which, therefore, becomes coloured or tinted on being exposed to light. The tint thus produced is compared with a standard one, painted on the glass lid of the actinometer, around a clear centre. When about to be used, a piece of sensitive paper is drawn forward, so as to be seen through the glass lid. This should be watched carefully if the light be vigorous, and when the tint of the paper is equal in depth to the standard tint of the actinometer, this is called "one tint." The paper is again drawn forward to the extent of the opening, so as to hide the tint just given, and expose another breadth of fresh colourless paper, which, when coloured to the standard degree, becomes the "second tint," and so on.

For a medium negative of ordinary density two tints may be sufficient. This may be assumed for the first trial. Presuming the exposure to have taken place, the frame and actinometer must now be withdrawn to a room in which there is not much light, but which need not have yellow blinds, if the shaded portion of the room be used in which to open the frame, and remove the pigment paper, which should be carefully kept in a drawer, or between the leaves of a blotting book, until developed. The sooner this is effected after exposure the better, as the action set up by the light is gradually continued even in darkness; so that prints which have been kept for some time after exposure will be found deeper in tone, when finished, than those developed immediately, although the time of exposure may have been the same in both. Allowance should be made for this if the exposed prints have to be kept for more than an hour after being withdrawn from the frame.

6. *Preliminary reference to Support and Development.*—The exposed paper, having been withdrawn from the frame, has now the latent picture upon the face of the pigment compound in an insoluble state; while much of this substance at the back of the print, in contact with the paper upon which the compound is laid, remains soluble, and, on being washed away, reveals the picture; but for the latter to be preserved, it is obvious that it must first be mounted upon some *support*, to retain it uninjured during the washing. It is the mode by which this is effected which constitutes the essential difference between the manipulations of the new Autotype process and its predecessors; and this mode is based upon a distinct general principle. Fargier employed collodion; Swan india-rubber; while Johnson

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* Continued from p. 225.

uses nothing but atmospheric pressure upon the picture film itself, supported on some impermeable surface.

7. *General Principle.—If the pigment film, after exposure be plunged into water until it be fully expanded (but no longer), and be then laid upon any plane surface impermeable to water, it will firmly adhere thereto, provided air be carefully excluded from between the surfaces.*

8. *The Support.*—It will be seen from the general principle just laid down, that pictures may be obtained directly on any plane, impermeable surface, for to such surface the exposed film will *permanently* adhere under the conditions named. Unfortunately, pictures so produced are inverted when ordinary negatives are employed. If these be reversed, then the images of the pictures are necessarily in their correct position.

When we consider the millions of valuable negatives that already exist (none of them inverted); when we reflect that reversed negatives cannot be obtained without loss of light, or other disadvantage if taken directly; nor without some risk, and not a little trouble, if transported from the glass to a collodion or gelatine film; it will be obvious that some method of obtaining permanent pictures must be found, free from the defect of inversion, without having recourse to inverting the negative. It has been already said that the new Autotype process provides for this necessity by very simple means, viz., the transference of the picture film from a plate ot metal or glass, used as a *temporary* support for the purpose of developing it thereon, to a surface of prepared paper with an enamel surface, on which it is to remain. For this purpose, the glass or metal plate must be prepared so as to prevent that adhesion which otherwise would ensue.

The nature of the support, and whether it be employed as a temporary or permanent basis for the print, give rise to a variety of styles of pictures, for the production of which we will proceed to furnish precise directions under their various headings.

(To be continued.)

THE CHEMISTRY OF THE CARBON PROCESS.

BY JOSEPH W. SWAN.*

In default of the paper which was to have been read this evening on carbon printing, by Mr. Hughes, and which we have the pleasure of expecting for our next meeting, I have been requested to make a few observations on the chemistry of the carbon process; and I shall confine my remarks within a very narrow compass, as I do not wish to lessen, but rather to increase, your appetite for Mr. Hughes's paper.

Bichromate of potash, like nitrate of silver, when in a pure state, does not suffer any alteration under the influence of light; but when it is mixed with organic matter the case is different. If, for example, a sheet of paper be washed with a solution of bichromate of potash and exposed to light, the paper changes colour, thereby indicating that bichromate, in contact with paper, is liable to decomposition by solar action. A mixture of gelatine and bichromate of potash is susceptible of change, by the action of light, from a state of solubility in warm water to a state of insolubility. This fact constitutes the basis of carbon printing, and on that account alone the nature of the action which produces this result well deserves to be carefully studied. But its importance is greatly increased by the circumstance that the action of light upon bichromated gelatine is not limited to the rendering of the gelatine insoluble, but is attended by several other changes, which can be made, and are made, subservient to the production of pictures in a great variety of ways; indeed, I know of no photo-chemical action so prolific of photographic processes as that which takes place between the salts of chromic acid and gelatine and other analogous substances.

When I first applied myself to carbon printing, the nature of the chemical change in virtue of which the gelatine becomes converted from a condition of solubility into one of insolubility was not understood, and the obscurity which then prevailed with regard to it very greatly increased the difficulties inherent to the process; in fact, if I had not, at an early stage of my experiments, possessed myself of this key to the cause of the many irregularities which attended the process, I think I should have entirely failed to make it practicable. It was quite essential, in order to make the process practically successful, that the means of making the gelatine tissue uniformly sensitive and invariably and freely soluble before exposure to light should be understood and under control. And to this end the chemistry of the process required to be known. At the outset of my experiments I found that my sheets of bichromated gelatine were liable and apt to become totally insoluble during the process of drying. When all the sheets of tissue prepared with one kind of gelatine or with one kind of colour were soluble, while those prepared with a different kind of gelatine or with a different colour were insoluble, there was, to some extent, a tangible cause for the difference of result; and one could escape from this difficulty by using that kind of gelatine, and those colours, which had been proved, by experiment, to be compatible with a soluble condition of the tissue. But it was far from being satisfactory to work in this blindfold sort of manner. It restricted one very annoyingly in the use of materials, and even with every care there were puzzling irregularities and frequent failures; often sheets which had been prepared exactly alike, with the same gelatine mixture, and in a precisely similar manner in every respect, would greatly differ in solubility: some would be freely soluble, while others were totally insoluble. In this case it was, of course, obvious that there must have been some difference in the circumstances under which the different sheets were prepared or dried to account for this difference in their condition as to solubility; for "nothing comes out of nothing." Accordingly, upon careful examination, I found that so long as the sheets were wet, a change, similar to the change which light produces, was gradually going on, and that this change became comparatively rapid when the sheets nearly approached to dryness; and I also found that heat accelerated the decomposition, which finally resulted in the sheets becoming insoluble, and that if soluble sheets were kept in a perfectly dry atmosphere their becoming insoluble was greatly retarded.

These observations aided me to a very large extent. Knowing thus much of the conditions under which the tissue became insoluble, I could generally so manage the drying as to be able to rely upon the solubility of my tissue. Still there were times when, without apparent cause, the tissue would be insoluble as soon as dry; moreover, it was not always alike in sensitiveness; not unfrequently it would be superficially insoluble—that is to say, the exterior surface, to an almost inappreciable depth, would be insoluble, giving the pictures produced from it a tinted appearance, as if they had been printed upon old, discoloured silvered paper. These irregularities led me to endeavour to discover the nature of the reaction which determined the formation of the insoluble gelatine compound. In this research I was guided by the knowledge that chromic acid and soluble chromates and bichromates are very easily decomposed by substances having an affinity for oxygen, such substances taking oxygen from the acid, and reducing it to a lower state of oxidation, and, when the reduction is complete, changing the character of the chrome compound from that of an acid to that of a base. This metamorphosis is readily produced by the action of oxalic, tartaric, and citric acids, and by various other substances. In the case of chromic acid and bichromate of ammonia, heat alone is sufficient to cause the evolution of that portion of oxygen which it holds so feebly, and the possession of which constitutes it an acid, and the loss of which destroys its acid character, reducing it to the condition of a base. I was also acquainted with the fact that gelatine enters into combination and forms insoluble compounds with certain metallic oxides; and I hence thought it not improbable that the insoluble gelatine compound with which I had been dealing in the carbon process might possibly be a combination of gelatine with reduced chromic acid—that is to say, of gelatine with chromic oxide, or with a salt having chromic oxide for its base. I accordingly tried the effect of adding such a salt to a solution of gelatine, and I found that under its action a hot solution of gelatine presently solidified to a firm jelly, which could not be reliquified by further heating, and which was totally insoluble in hot water. This experiment threw great light upon the chemistry of the process. and it, ogether with other observations, led me to the conclusion that gelatine aided by light reduces the chromic acid of the bichromate to a lower state of oxidation, and then enters nto combination with a compound of chromic oxide produced by the mutual decomposition of the chromic acid and gelatine, the consequence being the formation of the leather-ike substance with which we are now so familiar in carbon printing. Incidental to these changes a portion of gelatine s decomposed, and carbonic acid, and probably, also, an organic acid, are produced.

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* Contributed to the Photographic Society of London, and taken as read May 10th.

I found the addition of sugar to the mixture of gelatine and colour to favour the reduction of the chromic acid; and think it not improbable that when sugar forms one of the omponents of the tissue, it, rather than the gelatine, may ppropriate the oxygen of the chromic acid, and, in that ase, saccharic or oxalic acid would probably be formed.

According to my experience, neither glucose nor glycerine an be advantageously substituted for sugar in the mixture f gelatine and colour; both tend to induce insolubility, r to greatly retard solubility. Glycerine has a very peculiar action.

I found that the chromo-gelatine compound was soluble n solution of chloride of lime and in peroxide of hydrogen.

After ascertaining these facts, the causes of many failures were apparent, and the proper remedies could be applied; or example, that most embarrassing difficulty which I have mentioned of the sheets of tissue being superficially decomposed in process of drying, and producing tinted pictures, was completely obviated by placing a small quantity of hloride of lime (bleaching-powder) on the floor of the room n which the tissue was dried. Knowing the *rationale* of he process, this remedy naturally suggested itself, but without that knowledge the difficulty would have remained.

Acquaintance with the chemical principle upon which the onversion of gelatine from a soluble to an insoluble condiion depended, enabled me to calculate the effect of different igments, and of impurities in the various materials emloyed; and where these were of a nature to prejudice the uccess of the process, either to neutralize their effect by uitable additions, or, where that could not be done, to disard the unsuitable materials.

In a thousand ways I was assisted by a knowledge of the hemistry of the process, and I have no doubt the facts I licited respecting it may be usefully applied to other indred processes.

Before closing these remarks, I should like to say a few words with reference to the discovery of carbon printing. n the paper which I read before the Society six years ago, attributed the discovery, or rather the invention, of carbon rinting to Mr. Ponton. I think that was a mistake. Unoubtedly Mr. Ponton was the first to suggest and show the pplication of bichromate of potash to the purposes of hotography, but I believe he did not propose to apply it s a means of photographic printing in carbon. It is, I hink, indisputable that this idea was the conception of M. Poitevin, one of the most laborious and original of all the ioneers of photographic progress. I take this opportunity f correcting my error, and in doing so I feel much pleasure in acknowledging my obligation to M. Poitevin as the originator of the fundamental idea of carbon printing. It was a true invention, not a discovery; there is a wide difference. A discovery may be no more than a happy accident; but an invention is an act of imagination, and places a man in fellowship with the greatest of his kind.

REMARKS ON THE DRY PLATE PROCESSES.

BY WILLIAM ENGLAND.*

As the season is now approaching when the photographer will sally forth in search of the picturesque, the question will arise in the minds of some operators, Shall it be the wet or dry process? If the latter, which of these is likely to prove the most satisfactory in the hands of the amateur? I am tempted to offer these few remarks from the fact that the question is often put to me, "Which process do you recommend?" Having been engaged for the last ten years in experimenting with and carrying out practically several of the dry processes (particularly those now so well known under the titles of "The Collodio-albumen," "The Gum-gallic" of Mr. R. M. Gordon, "The Coffee," and others), I will endeavour to point out some of the difficulties which the amateur may have to encounter, and to state the capabilities of these various methods, so that those who may wish to commence dry-plate work may select at once that which appears best adapted to his special requirements.

I will commence first with the gum-gallic process, as that with which I have experimented most recently, and worked during the past summer for several months. I believe it to be, on the whole, the best for general use, and the one I should recommend to the adoption of the amateur. I may here observe that this opinion is not founded on a few experiments merely, but is the result of experience gained during the taking of several hundred negatives.

On commencing the practice of the gum-gallic process, and closely following the instructions published by Mr. Gordon (which, in the hands of that gentleman, produced such excellent results). I did not at first meet with the success I anticipated; and it was only after introducing some slight modifications that I could work with it to my satisfaction. These I will briefly explain:—The preservative, as originally recommended, gave me films which developed unequally, and caused stains which could not be in any way traced to defective manipulation, but which repeated experiment led me to believe could be altogether avoided by using the preservative more dilute. I would therefore recommend the employment of a solution of not more than five grains of gum-arabic and three of sugar to the ounce of water. This preparation will dry more evenly over the film than that of greater strength. I may also state that iron development only proved satisfactory in cases where the plates were quite recently prepared. After keeping for more than forty-eight hours I have never succeeded in developing an image at all satisfactorily with iron. On the other hand, with plain pyrogallic, and the addition of a few drops of dilute ammonia (should the image not readily appear), and afterwards bringing up the intensity in the usual way, I have never met with a failure: and this mode of development, so well known and often practised, seems to me imperative in every dry process where the plates have been kept for a lengthened period. This latter remark brings me to a most important point, viz., the keeping qualities of dry plates. I must confess my faith to be much shaken in the idea that any sensitive film will keep indefinitely, or even a few months, without undergoing considerable deterioration. My past experience has convinced me that if the finest results are to be obtained, plates must be prepared in small parcels at a time, and used without delay. I think it is to the want of appreciation of this fact that so few, comparatively, have succeeded in producing results that can be compared with those ordinarily obtained by working with wet plates. To avoid this difficulty I take with me during a summer campaign everything necessary for the preparation of dry plates. Very few extras in the way of apparatus are required; simply a drying-box, a portable india-rubber tray to serve as a sink, a gutta-percha dipping-bath with divisions for washing the plates, and also some yellow calico to put over a window. In this way I am able to prepare a batch of plates and use them on the first favourable opportunity. Three dozen glasses is the utmost I take out at a time; these occupy about a fortnight in the preparation, exposure, and development, and this limit of keeping I find quite long enough to subject the dry plates to with the certainty of securing the best results which they are capable of giving. After that time a longer exposure is required, and it seems impossible to develop the plate without obtaining too violent a contrast of light and shade, particularly where the view is a difficult one; for instance, with very strong lights and deep shadows. This circumstance, together with a tendency to blurring, I find to be the serious defects of the gum-gallic process.

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* Read before the Photographic Society of London.

In the modified collodio-albumen process, as published by me a few years ago, this defect of giving hard negatives after long keeping is not met with; in fact, a difficulty occurs occasionally in not being able to get sufficient contrast readily, unless the view to be taken be strongly illuminated. Therefore, for some purposes, such as the rendering of architectural subjects, I would recommend this process in preference to that first named.

I must not forget the coffee process, which has many admirers (and deservedly so), and whereby the plates can be used fresh with tolerable certainty of giving excellent results. But I have found that long keeping gives rise to the defects complained of in the gum-gallic method. It will be found an improvement in preparing the preservative for coffee plates to reduce the quantity of sugar, and to add a few drops of albumen to each ounce of the coffee solution. This will give better keeping qualities and softer negatives, but the time of exposure will require to be slightly increased. With these modifications I have produced very satisfactory results.

Those operators who desire plates of very great sensitiveness should practise the morphia process. These plates work very rapidly when freshly prepared, but will not keep in good order more than two days when the morphia is used alone. By the use of the following preservative we are enabled to keep the plates good for a fortnight:—

Water	1 ounce
Acetate of morphia	1 grain
Gelatine	3 grains
Acetic acid	5 drops
Albumen	5 ,,

For the first few days iron-development may be employed, but after that period alkaline pyro should be resorted to by preference. The same quality of collodion, and the same manipulation up to the point of applying the preservative solution, may be employed in all these processes; therefore the operator has it in his power to vary his practice considerably, and obtain very different results simply by using one or other of the above-mentioned preservative compounds.

I have brought for the inspection of the members a few proofs from negatives obtained by the several processes mentioned in this paper, and trust that those gentlemen who have given their attention to dry-plate photography will favour us with some of the results of their experience; for it is only by such a comparison of notes and conclusions that we can arrive at that most desirable of processes, viz., a thoroughly reliable and practicable mode of preparing dry plates, possessing such qualities as will enable us to dispense altogether with the wet process for outdoor operations.

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PHOTO-MECHANICAL PRINTING PROCESSES.

BY LIEUT. J. WATERHOUSE, R.A.

[Referring to the Royal State Printing Office at Berlin, Lieut. Waterhouse gives the following particulars.]

Heliographic Engraving.

By the kindness of Herr Wedding I was enabled to see the whole process of heliographic engraving, which is as follows:—

The process may be divided into seven parts: 1, the preparation of the negatives; 2, preparation of the copper-plate; 3, taking off and blackening the collodion film; 4, transferring the collodion film to the copper-plate; 5, exposure to light; 6, development; 7, etching.

These will be considered in detail.

1. *Obtaining the Negatives on Glass.*—The method of obtaining the negatives for this process does not differ very much from that in general use. They are taken by the ordinary wet collodion process, developed with sulphate of iron, fixed with cyanide of potassium, and then intensified, if necessary, with pyrogallic acid and nitrate of silver. The collodion should be tough, and made with a proportion of weak spirit, or the pyroxyline may be slightly moistened with distilled water before use.

2. *Preparation of the Copper-plate.*—A smooth, polished copper-plate is cleaned perfectly with tripoli and alcohol, and then coated with a solution of bitumen of Judea, or, as it is more commonly called, "asphaltum" in turpentine. This solution is made by dissolving one part of asphaltum in fifteen parts of good turpentine, which has previously been kept in an open bottle for about a month. Before use, a small proportion of oil of citrons is added to the mixture, which should be about as thick as cream.*

The solution is poured on the plate like collodion, and the coating should be of rather a dark colour. The plate is then placed in a sloping position, coated side downwards, and left to dry in the dark, its position being changed from time to time.

3. *Taking off and Blackening the Collodion Film.*—In order to obtain the closest possible contact between the negative *cliche* and the sensitive surface, the collodion film is transferred to the prepared copper-plate, a method which has the great advantage of securing that perfect contact without which no good results can be obtained, and which it is almost impossible to obtain by any other method; it has, however, the disadvantage of destroying the negative, which must be taken over again in case of failure.

To make the film capable of being transferred to the copper-plate, it is treated with a bath composed of—

Sulphuric acid	1 part
Glacial acetic acid...	1 ,,
Water	320 parts.

It is left in this for a short time, and then washed with distilled water. The film can then be removed in a basin of water with the point of a brush, and easily laid down reversed on another glass plate. In order to give greater intensity, the film is blackened by means of a solution of bichloride of platinum:—

Bichloride of platinum	1 part
Distilled water	128 parts.

The glass plate with the film is lifted out of the basin of water and immersed in a solution containing one part of the above diluted with thirty-two parts of distilled water;

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* The above is the formula given to me at Berlin, but I have since seen another written account, in which it is given as follows:—A solution of asphaltum in turpentine is made in an open-necked flask, and should have the consistence of syrup. One part of this is taken and diluted with three parts of turpentine and one part of oil of citrons to the substance of collodion. In order to make it more sensitive to light, a few drops of a spirituous solution of nitrate of silver are added; this is prepared by dissolving the salt in some drops of alcohol and adding turpentine till a salted spirit is formed, which, when poured on paper, shows a red colour. The solution of asphaltum must be filtered through cotton before use.

t remains till it is blackened sufficiently, and is then careully lifted out, raised, and laid in a large trough containing solution of glycerine composed of—

Glycerine	1 part
Water	4 parts.

t is then ready for the next operation.

4. *Transferring the Collodion Film to the Copper-plate.*—Vhen the coated copper-plate is dry, it is placed in the rough of glycerine water; the film, now swimming, is careully pushed on to it, and fastened to one side with small lates of lead, &c., and the glycerine water is carefully emoved, so as to leave the film free from wrinkles, any airubbles being removed with the aid of a brush. The plate s then lifted out obliquely, so that the remainder of the vater may run off. If the film does not lie firmly enough, ts edges must be fastened with a varnish of gum and lycerine.

5. *Exposure to Light.*—When the transferred film is dry, he plate is exposed to diffused daylight for a period varyng, according to circumstances, from six to thirty-six ours; it is better, however, to over-expose than not to xpose enough, and to work slowly by diffused daylight ather than bright sunshine.

6. *Development.*—When the plate is judged to have been ufficiently exposed, which can only be learnt by experince, it is taken in and placed in a basin of water, and ently rubbed with the finger to remove the film. It is hen dried, and gently rubbed with a tuft of cotton wool lipped in olive or linseed oil, and after a lapse of a few ninutes it is rubbed in the same way with turpentine. After the rubbing with turpentine has been continued for little time, the design gradually begins to appear, and by legrees the unaltered bitumen is all removed; the design hen appears in clear brown on the polished copper ground, nd should be exceedingly sharp, the lines being firm and inbroken. The margins are cleaned with a little chloroorm or benzole, the plate is then washed with soap and vater to remove the oil, and finally thoroughly washed with lenty of clean water to remove the soap, and, when dry, s ready for etching.

7. *Etching.*—For this purpose, the back of the plate aving been varnished with strong asphaltum varnish, it is laced in a porcelain trough containing some of the followng solution:—

Pure muriatic acid	8 parts
Ordinary muriatic acid	2 ,,
Chlorate of potash	1 part
Cold water...	40 parts
Hot water	8 ,,

It is prepared by diluting the pure acid with the cold vater; the ordinary acid is next added, and then the chloate of potash dissolved in the hot water. The plate is xposed to the action of this solution for a time varying rom one to three hours, according to the nature of the ubject; during the biting in, it is brushed with a soft rush to remove any dust that may be deposited, and the essel containing the solution is agitated occasionally, so hat it may be kept of equal strength. When the biting n is finished, which is shown by the weakest lines of the rawing beginning to appear, the plate is taken out of the olution, and washed well with water; the image is removed vith chloroform. The plate then presents a positive image n slight relief, and in order to make an intaglio plate which hall give direct copiés, the plate in relief must be silvered, nd an electrotype copy made of it in the ordinary way; his may be done in a few days, and then the required umber of copies may be struck off in an ordinary copperlate printing press.

This was the only instance in which I obtained any nformation of the details of a process of heliographic ngraving, and the information given is of the more value s I saw the beautiful results the process is capable of giving. f the above method is found to work well in India, as from personal experience I know it will in England, the process will be of great value in many cases, especially when it is required to reproduce copies of engraved maps or other engravings.

I beg to acknowledge the courtesy and kindness of Herr Wedding, the director, and of Herr Carl Busse, the vice-director of the establishment, who accompanied me in my visit to the photographic rooms, and superintended the heliographic operations in my presence.

THE PURIFICATION OF GELATINE.

BY DR. JULIUS STINDE.*

The extensive employment of gelatine, both in the carbon and mechanical printing processes, as likewise for other purposes in photography, behoves us just now to pay increased attention to its chemical and photographic qualities; this is the more necessary from the fact that the ordinary gelatines met with in commerce differ very materially from one another, and that therefore a uniform supply can scarcely ever be relied upon from any one source. This inequality in the nature of the gelatine does not refer to its transparency or to such qualities as render it serviceable for ordinary technical or household purposes, but, as already remarked by Mr. Woodbury, is often apparent only when employed in certain photographic manipulations. It is to this difficulty, we are convinced, that failures in many printing processes are due.

The better descriptions in commerce are mostly very transparent, or only slightly turbid, whereas commoner sorts are more opaque, and possess the appearance somewhat of ground glass. This turbidness is in general due to the presence of phosphate of lime and gyps, impurities which result from the decomposition of bones (from which most French gelatine is made), by the action of muriatic acid, and the subsequent influence of the ammonia in the atmosphere.

Gelatine ash contains phosphate of lime, chloride of calcium, carbonate of lime, alumina, common salt, and traces of iron, but the relative proportions of these vary with the quality of the gelatine. At the same time it must not be inferred that the best gelatine is that which contains the least quantity of salts, for, as a matter of fact, very transparent gelatines sometimes contain larger quantities of alum, soluble phosphate of lime, and chloride of calcium than those of a turbid character.

The soluble lime compounds are easily recognized in distilled water in which gelatine has been softened. A few drops treated with oxalate of ammonia at once become turbid, and yield, after a short time, a precipitate of oxalate of lime insoluble in acetic acid, but soluble both in hydrochloric and nitric acid.

Alum can only be found in the gelatine ash with certainty. The white flakes of alumina and the residue of impure gelatine are so very similar in appearance, and so difficult to separate from one another, that the decomposition of the organic matter is the only reliable method of dividing them.

A neutral solution of gelatine containing alum or phosphate of lime will yield after a short time, on the addition of bichromate of potash, a more or less curdled or yellow cheese-like compound, insoluble in hot water. The more alum or phosphate of lime that a gelatine contains the greater tendency it possesses to form combinations with acid chromate salts, which are insoluble in water, and which therefore impart at once to the sensitive gelatine film properties which should be possessed only by such portions as have been exposed to light. For this reason it is a matter of importance that the gelatine should be freed as much as possible from these impurities.

Alum in combination with gelatine likewise prevents its filtration when dissolved in lukewarm water. A solution of pure gelatine, if treated with alum, becomes thick and slimy, a circumstance, indeed, taken advantage of by cooks, wine manufacturers, &c., but exceedingly injurious to the photographer. A strong gelatine solution thickened with alum is incapable of being filtered even through very coarse papers, and for this reason a cotton or woollen fabric is used for the purpose, which fulfils its function, however, very imperfectly. Without the gelatine is passed through fine filter paper it is impossible to secure it of a clear and transparent nature—in such a condition, indeed, as all photographic solutions should be. A turbid fibrous collodion would be rejected by the youngest amateur, and yet most of us in our ordinary manipulations employ gelatine solutions which, besides being chemically impure, also contain a considerable quantity of mechanical impurities.

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* *Photographische Correspondenz.*

The fact that very many carbon prints lack the delicacy of silver pictures is doubtless due to the presence of mechanical impurities in the pigment film.

Some years ago, by the aid of the microscope, I exerted myself to obtain a perfectly pure material. With some gelatines this was more easy to do than with others, a circumstance attributable, as I afterwards discovered, to the varying quantity of alum. The mode of proceeding best calculated to secure a pure gelatine is to cut the dried gelatine into thin small pieces, putting them into cold distilled water changed two or three times, and to stir them occasionally with a glass rod. When the water thus poured off and filtered has ceased to become turbid by the addition of oxalate of ammonia (one part of oxalate of ammonia in twenty-four of water), the softened gelatine is put into a porcelain vessel and dissolved, without further addition of water, at a temperature of 30° Cent. The white of an egg diluted with double its volume of distilled water, and supplemented with five or six drops of ammonia, is now put into a bottle and shaken to a froth, one egg sufficing for the purification of 200 to 250 grammes of gelatine. The albumen is intimately mixed with the slightly warmed gelatine solution by means of a birch whisk, and when this has been thoroughly done a dilute solution of acetic acid (250 parts acid to 1 part water) is added, drop by drop, during constant stirring of the liquid. When a slightly acid reaction is evident upon blue litmus paper, the liquid is quickly brought to boiling point, still being agitated, either over a spirit-lamp or on a sand bath. After boiling for two or three minutes, it is ready to be filtered. This is done through good Swedish paper, the funnel of the filter being, if possible, sufficiently large to contain the whole quantity at once. If enough albumen has been added, the solution will run through the filter in a clear, syrupy form, and quicker than many fluids of a like nature. The operation should be conducted in a warm locality, as, for instance, in a drying compartment, or in the vicinity of an oven. The coagulated albumen, as likewise certain particles of gelatine which are unadapted to the production of sensitive films, are kept back by the filter.

According to my results, the white of egg either possesses more affinity for the alum than the gelatine, or it coagulates with this impurity and with a certain amount of the gelatine, while the greater portion of the latter runs through the filter. While, therefore, the moistening of the gelatine in water, in the first instance, was instrumental in removing the soluble lime salts, the albumen in the same way likewise separates the alum. Any fibrous or organic particles are removed by the filter, and there remains then in the gelatine but a little acetate of ammonia and traces of free acetic acid. The latter may be removed—at any rate, to a very great degree—by means of dialysis. The dialyser consists either of a short glass cylinder, of which one end is scarcely closed with parchment paper, or of a broad hoop of oiled wood or gutta-percha closed at one end with the same material. To ascertain whether the parchment bottom is absolutely waterproof, the vessel should be filled with water and carefully examined; if well constructed, there should be no sign of water either at the bottom or round the sides for the lapse of a quarter of an hour. If, however, any drop of water is visible upon the parchment, the place is marked with a pencil, and when the vessel has been emptied and dried, that portion is coated outside with ordinary white of egg; when this is dry, boiling water is poured on from the other side to coagulate the albumen and to close the flaw.

The filtered gelatine is poured upon a clean porcelain plate, and, when dry, cut into squares and placed in the dialyser, which contains about the same volume of distilled water as there is gelatine. The apparatus is then floated upon a vessel of distilled water, and the larger the quantity of the latter, as also the longer the operation continues, the more completely will the salts be separated from the gelatine. When the acidity has disappeared from the gelatine, and no precipitate is formed by the addition of a solution of nitrate of silver and nitric acid, the operation may be considered finished. It is poured out and dried, and will be found to furnish a transparent solution which does not become turbid on the addition of bichromate of potash, and is capable of being filtered through the finest filtering paper.

Hamburg, *April*, 1870.

Correspondence.

GUMMING MASKS TO NEGATIVES.—RETOUCHING DESKS.

Dear Sir,—Two things suggested in the News, May 4th, seem to me objectionable. I wonder how they succeed in the experience of others!

Under this title, "A good plan," it is suggested that it is economical to gum paper masks on the face of the negative, to avoid wasteful margins. I have gummed several sorts of paper to the face of negatives, with the invariable result that in the course of some month the paper more or less tears the film, even in some cases bringing it quite off the glass.

2. For touching-up negatives, a looking glass is recommended as a reflector. Is not a piece of white paper far less trying to the eyes?—Yours truly, Ed. Seely.

[We shall be glad to learn the experience of other readers. We have occasionally attached paper masks to negatives, but have generally turned over the edge of the paper, and gummed it to the back edge of the negative. In regard to the second query, if Mr Croughton's plan be adopted, of working with a mask over the negative, covering all but the small portion immediately in hand, there is not much risk to the eyes.—Ed.]

Proceedings of Societies.

South London Photographic Society.

The usual meeting of this Society was held at the City of London College, on Thursday, May 12th, Mr. **Sebastian Davies**, V.P., in the chair.

The minutes of the preceding meeting were read and confirmed, and Mr. E. A. Storey elected a member.

The **Chairman** then announced that in accordance with the practice of the past few years, this evening had been devoted to the exhibition of the works produced by members and others during the past year, and he trusted that in the criticisms and remarks which would follow, good would result to all, for he felt fully the importance of meetings like the present, where results by different processes could be fairly contrasted, and a fair comparison made between not only the different dry methods, but between the dry and wet processes also.

The recent works of the chairman were then passed round for examination. These were a series of views taken in the Isle of Wight last autumn by the wet process, and views in Cassiobury Park from dry plates. In these, the dry were fully up to the wet in delicacy, and, in some cases, possibly from the nature of the subjects delineated, we thought them technically best.

Mr. H. **Cooper**, Jun., exhibited a varied collection, all of em being extremely good. A series of Devonshire, on 7½ by plates, by wet collodion, were much admired. In several, the neral feeling in the work strongly suggested that of Mr. ssell Manners Gordon. There was the same breadth and nderful rendering of ærial perspective which has made the ter gentleman's works so famous. The portraits were fully to the productions of the best professional men.

Mr. **Howard** showed a large series of views by the gum-llic process, which were very fine. The average exposure s one minute, with a very small stop. The process, in his nds, had proved most sensitive, for he had adopted the small p, as many of the views required a wide angle to do them tice. In one case, however, where some "Jack in office" pped him in "mid career," the exposure was only ten onds, but the result was perfect, for there was no lack of ail whatever.

Ir. **Price** exhibited a most ingenious and beautifully made nera, which packed away into an absurdly small space. It s principally constructed of metal. It had been made from igns of his own, and was intended for microscopic work, as ll as for the production of plates of about three inches for tern slides. The camera stand was the most compact we re yet seen, and was a wonderful specimen of amateur work-nship. It was made of American hickory. When packed, ooked like an umbrella in a case, but the legs, being tele-pic, were pulled out to the requisite length with per-t ease, and were tightened by a ferrule, which at once re perfect rigidity. The advantage of having legs of unequal gth for a camera-stand in out-door operations was commented on by several.

Ir. **Hunter** showed pictures by members of the Amateur otographic Association, many of which were good.

Ir. **Price** pointed out several amongst them taken by him-f, by the collodio-albumen process, that had been sensitized t spring, exposed in September, and developed after ristmas. He believed that, though an extremely slow pro-s, it was the best where long keeping was needed. He sure plates might be kept two years with perfect safety.

n answer to a question on the subject of blisters, Mr. Price nd the surest way to overcome them was to use a powdery lodion, and to immerse the plates in a bath of albumen for uarter of an hour; no need of pouring on as was formerly ie. By adopting this plan he had never been troubled with m.

Ir. **Dunmore** exhibited several pictures; one, a large head, led "On the Look-out," was very forcible and clever.

Ir. **Blanchard** regretted he had been prevented by pressure business from bringing anything fresh. He exhibited three ds shown at the last photographic exhibition.

Ir. **Cocking** showed several novel photographs, which were remely beautiful. They were done by an ingenious plan, cribed by him some time ago. He has called them photo s. One of them, a vignetted landscape, has, by his plan of nting high lights on a separate glass, and then sunning n all the rest of the picture except the parts protected, n converted into a beautiful little picture, which would zle many at first glance.

pleasant gossip terminated an extremely pleasant meeting. Ir. **Dunmore** promised a paper for the next meeting in e.

Talk in the Studio.

MERICAN PHOTOGRAPHIC EXHIBITION.—The executive of American National Photographic Association are making ugements for an annual meeting and exhibition at Cleve-l, Ohio, which promise to possess unusual excellence.

AINTAINING PRICES BY COMBINATION.—We always counsel ographers to get the highest price the quality of their k will command, but we fear that there is no other method curing good prices except producing good work. A society commenced some time ago in Toronto, and, as our Phila-hia contemporary remarks, "decent living prices were ed upon, and all went on pleasantly until some of the number me demoralized, broke ranks, put down prices, and thus e up what would have been a pleasant, profitable affair to oncerned if kept in its integrity."

IE METRICAL SYSTEM.—A conference of the International Decimal Association was held recently at the Society of Arts. The twelfth annual report, read by Professor Leone Levi, reported considerable progress in the various means instituted for introducing the metric system, and various resolutions in favour of reform in the system of weights and measures in this country were adopted.

A JACK-OF-ALL-TRADES.—Mr. J. C. Howell, a witness in the recent McFarland trial in New York, illustrates the statement that the American citizen out of luck, as a matter of course, thinks he can "run a photographic gallery," or, indeed, take up almost any trade or profession. His evidence runs thus:—"Have been in the Daguerreotype business one year; carried it on in Freeport, Ill.; published a paper five months at Freeport; practised dentistry in 1849; practised it ten years altogether; was a drug clerk in Ohio; in 1840 worked on a farm; have been in the Government service since 1861; was a clerk in the Indian Department in Washington City; sold patent rights in 1864; was in that business one year; was Inspector of Customs in New York City in November, 1864; held that office for two years; then I came down to the hair-pin buisness; consider myself now an inventor."

TUNICARE.—As several enquiries have reached us as to the result of experience with this material, we may remark that we hear many good reports. Mr. Charles La Porte says:—"I consider Tunicare to be one of the greatest boons ever offered to the operator, as giving the certainty of obtaining a chemically clean plate. I have been a working photographer the last fourteen years, during which time I have been troubled, like others, more or less, with dirty or metallic looking plates. A short time back I was persuaded to try the 'Tunicare,' and I have much pleasure in stating that I found it all the maker promises. I am quite sure any photographer once using it will never be without it. I find it a wonderful save in time and labour; one may also use any common glass, so that it practically costs nothing."

PHOTOGRAPHERS BURNED OUT.—The *Philadelphia Photographer* gives the names of three professional photographers burned out in the month of March.

MATT RETOUCHING VARNISHES.—A correspondent informs us, as a caution to our readers, that having applied one of the matt varnishes in the market to a negative which had been already varnished with a spirit varnish, both the latter and the film itself were partially dissolved, so as to spoil the negative. Before repeating a similar operation with a valuable negative, we should recommend our readers to experiment on an old plate before trying any sample of varnish the exact qualities of which they do not know.

COLOURING OF SMALL METALLIC OBJECTS.—M. Pusher makes a solution of four ounces of hyposulphite of soda in a pint and a half of water, and adds a solution of one ounce of acetate of lead in the same quantity of water. Articles to be coloured are placed in the mixture, which is then gradually heated to a boiling point. The effect of this solution is to give iron the effect of blue steel, zinc becomes bronze, and copper or brass becomes successively yellowish red, scarlet, deep blue, bluish white, and finally white with a tinge of rose. This solution has no effect on lead or tin. By replacing the acetate of lead in the solution by sulphate of copper, brass becomes of a fine rosy tint, then green, and finally of an iridescent brown colour. Zinc does not colour in this solution—it throws down a precipitate of brown sulphuret of copper—but if boiled in a solution containing both lead and copper, it becomes covered with a black crust, which may be improved by a thin coating of wax. If the lead solution be thickened with a little gum tragacanth, and patterns be traced with it on brass, which is afterwards heated to 212°, and then plunged into solution No. 1, a good effect is produced.—*Journal of Franklin Institute.*

METHOD OF PRODUCING UPON IRON A DURABLE BLACK SHINING VARNISH.—M. Weiszkopf.—Take oil of turpentine, add to it, drop by drop and while stirring, strong sulphuric acid until a syrupy precipitate is quite formed, and no more of it is produced on further addition of a drop of acid. The liquid is now repeatedly washed with water, every time refreshed after a good stirring, until the water does not exhibit any more acid reaction on being tested with blue litmus paper. The precipitate is next brought upon a cloth filter, and, after all the water has run off, the syrupy mass is fit for use. This thickish magma is painted over the iron with a brush; if it happens to be too stiff, it is previously diluted with some oil of turpentine. Immediately after the iron has been so painted, the paint is burnt in by a gentle heat, and, after cooling, the black surface is rubbed over with a piece of woollen stuff dipped in and moistened with linseed oil. According to the author, this varnish is not a simple covering of the surface, but it is chemically combined with the metal, and will not, therefore, wear off or peel off, as other paints and varnishes do, from iron.—*Chemical News.*

Percentage of Water in Alcohol.—A simple test of percentage of water in alcohol is to pour a little chloroform into a graduated glass tube, and a given volume of the spirit to be tested is added, and both well shaken up together. On settling, all the water will be found to have separated from the alcohol (which has combined with the chloroform), and may be read off on the graduated tube.—*Artizan.*

Something for Studios.—Building paper now forms a regular article of commerce in the United States. It is a hard compact paper, like an ordinary book cover, and is saturated with tar, and used on the outside of frame buildings, under the clapboards, also under shingles and floors, to keep out damp and cold. It is also used on the inside, not saturated, instead of plastering, and is said to make a warm and cheap wall. The Rock River Paper Company of Chicago are doing a large business in it.—*Scientific Review.*

Removing Silver Stains.—At a recent meeting of the Philadelphia Photographic Society, Mr. Powell communicated a simple method of removing silver stains from the hands, originated by Mr. O. S. Hubbell. Treat the stains with a weak solution of tincture of iodine, and afterwards clean with dilute aqua ammonia.

Solubility of the Chloride, Iodide, and Bromide of Silver in Salts of Mercury.—M. Debray, in a paper, the *Comptes Rendus*, points out that the insoluble chlorides, iodides, and bromides of silver, and also of mercury, are soluble, to a greater or less extent, in the soluble persalts of mercury, especially at a high temperature, and that, on cooling, some of these haloid salts crystallize; and in that state the chloride of silver perfectly resists the action of light, which the author attributes to the presence of traces of mercury.

Collodion for the Preservation of Eggs.—M. Martin, in *Les Mondes*, reviews the various methods now in use for the proper preservation of eggs for any length of time, and discusses the value of these methods; and, further, proposes the use of collodion as a fit varnish by means of which the cause of the decay of the eggs—viz., the porosity of the shell, and hence access of air to the interior—may be prevented. He also mentions that the soundness of eggs may be tested by immersing them in water containing thirty per cent. of common salt in solution; in this brine, good and sound eggs sink, while bad eggs float. He adds that a chemist has just discovered a process whereby the albumen of the blood of butchered animals may be obtained in a completely colourless state, so as to render it a fit substitute for the very large quantity of dried albumen from eggs now employed, especially in calico printing.

To Correspondents.

Gulielmus.—Many photographers have for years abandoned the use of pyrogallic acid in the ordinary wet process, some securing sufficient intensity in development with iron without any second operation, and many intensifying with an iron solution. There are various methods of using iron for intensifying, which we have detailed from time to time, and which you will find most readily in the condensed formulæ and instructions in our Year-Books for the last few years. In many cases, where the collodion is in good condition and possesses sufficient body, the bath in good order, and the light good, negatives can be obtained with an ordinary iron developer which do not require intensifying. In other cases gelatine, sugar, or some other organic addition is made to the developer to secure sufficient intensity at once. A plan adopted by many is, after development, if the image is not sufficiently intense, to wash the plate, pour a little silver solution over it, and then again apply the iron developer. This plan at times causes fog, if things are not in very good condition. A capital plan is to keep a citro-nitrate-of-silver solution, consisting of twenty grains of nitrate of silver and thirty grains of citric acid in an ounce of water, and, after development, add a few drops of this to the iron developer, and apply it to the film. This will generally intensify very satisfactorily.

A Young Amateur.—The paper you enclose is not intended for photographic printing at all. It is the paper prepared for receiving transferred collodion films, upon which the image has been printing in the camera. What you require is, we presume, an extra thick albuminized paper, which, doubtless, your dealer can supply you if you order it. The sample sent has been the result of some misunderstanding.

A. Barnes.—The horny condition of collodion which repels the silver solution is very difficult to work with. If the addition of a drop or two of water does not cure, age is the only thorough and trustworthy remedy. Agitating with a little powdered carbonate of soda sometimes destroys the repellent character; but there is a risk of bringing about fogging. Immersing the plate soon after coating will often modify the evil. 2. Your plan of dealing with your baths is a very good one, especially if you are kept sufficiently busy to make your time valuable. If you had plenty of time it might be worth while doctoring the baths, instead of precipitating the silver and getting it reduced. 3. If your nitrate of soda be pure there should be no precipitate formed on mixing it with a nitrate of silver solution. 4. The collodion you mention is generally ready a week or two after mixing, and remains good a few months.

Dane.—The metallic-looking scum arising during development may be due to several causes. It may be due to imperfections of collodion, nitrate bath, or developer. The presence of ether and alcohol in the nitrate bath is a common cause. The use of impure acetic acid in the developer is a not unfrequent cause. Impure solvents in the collodion is an occasional cause. Try fresh collodion; if that does not remove the defect, try a fresh sample of acetic acid, and so on. You can only ascertain the cause certainly by an exhaustive process.

Cymro.—If the lady consented to the publication of her portrait, we do not know of any method whereby she can put a stop to its circulation, except by an appeal to the courtesy of the photographer, or, if it be to him a source of profit, by compensation. Consent given is like any more tangible thing given, and cannot be withdrawn, except by the choice of him who holds it. It is clearly a matter for negociation, in which either money or good feeling, as the case may be, may influence the desired end. There is no form of compulsion which can be used, unless the photographer in some way exceeds his permission.

Williams.—As a general rule, fresh rain-water, filtered, will serve well for developing solution. 2. A smaller proportion of gelatine should be used. Half a grain of gelatine in an ounce of the iron solution will generally be found sufficient. The proportion you propose, which is equal to one grain and a-half per ounce, would make the solution very viscous, and, in cold weather, troublesome to work. It will keep some time. If the chemicals generally are in good order, such a developer will give sufficient vigour without further intensification.

Chloral.—You will have just so much of the image enlarged on the screen as you illuminated in the negative. This will be regulated by the diameter of the cone of rays and by the position of the negative in the cone of rays. With a condenser of 3½ inches diameter, the card negative must be very near to the negative to get the whole of the figure illuminated. The further the negative is from the condenser, the smaller will be the portion of it illuminated, because the diameter of the cone of rays passing through it is smaller. The size of the enlarging lens will not affect the question. It depends entirely on the size of the condenser, the size of the negative, and the distance between the condenser and negative.

Lieut. Abney.—In our last, we noted, in the report of the Photographic Society of London, the election, as a member, of Mr. W. de W. Abney; the correct designation should have been Lieut. Abney, F.R.A.S., Royal Engineers.

A. L. Henderson.—Thanks.

Several Correspondents in our next.

Photographs Registered.

Mr. E. F. **Butler**, Deal,
Photographs from Painting of Wrecks on Walmer Beach.

Mr. J. **Collings**, Cardiff,
Photograph of Cross in Bishop's Court, Cardiff.
Photograph of Rev. — Fordyce.

Mr. J. **Sunderland**, Birmingham,
Eight Photographs of Mr. J. Poole and others.
Three Photographs of Mrs. Mary Poole.

Mr. J. **Richards**, Park, Cardiganshire,
Photograph of J. Harris and his Wife.
Photograph of J. Harris and his Family.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
The Mezzotinto Process ... 241
A Startling Patent Claim Defeated ... 241
Bengal Photographic Exhibition ... 242
A New Carbon Process, and Photo-lithographic Process ... 243
Meinerth's Mezzotinto Process.—Details of Manipulation. By Carl Meinerth ... 243
A Convenient Dark Tent ... 244
Collodio-Bromide Manipulations. By M. Carey Lea ... 245
Manipulations in Johnson's Carbon Process ... 246
PAGE
Photo-Mechanical Printing Processes. By Lieut. J. Waterhouse, R.A. ... 247
Recent Patents ... 248
Photographic Piracy of Engravings ... 249
Piracy of Photographs ... 250
Correspondence.—Alleged Piracies ... 250
Proceedings of Societies.—French Photographic Society ... 251
Talk in the Studio ... 251
To Correspondents ... 252
Photographs Registered ... 252

THE MEZZOTINTO PROCESS.

Mr. Carl Meinerth has recently favoured us with some further examples of the method of printing which he has distinguished as the mezzotinto process, and which, as our readers already know, consists in interposing a transparent medium between the negative and the sensitive paper. "Printing through a medium," as we have before explained, is an old and familiar idea; but until we saw the examples of Mr. Meinerth we had never seen anything to especially commend the plan, nor until Mr. Meinerth took it in hand had we seen or heard of any systematic attempt to utilize the idea, and to prove in an efficient manner of what it was capable. The specimens before us are, as were some former examples, exceedingly charming. Without offensive loss of definition, there is an exquisite softness which is very beautiful. Wherever there are clear transparent lines in the negative, as in the eyes, deep shadows of hair and drapery, the light seems to pass right through without appreciable divergence, thus producing crisp sharp lines in those portions of the picture where good definition is necessary. It is only in the lights and half lights that the light is to any extent diffused, and the action produces here a singular diaphanous softness, giving the prints the appearance of pictures on porcelain or opal glass. From Mr. Meinerth's communication on another page it will be seen that the means employed are very simple; consisting of an ordinary piece of thin glass, and sunlight printing. We certainly commend the plan to our readers in all cases where they wish to get rid of the coarse effect of freckles, pock-marks, scars, rugose lines, &c., in negatives which render, with a faithfulness too uncompromising, the strongly pronounced personal peculiarities of sitters. The effect, although different, is a good substitute for that of retouched negatives.

A STARTLING PATENT CLAIM DEFEATED.

The "children of the sun" in this country scarcely know the extent of their privileges or immunities. All the ordinary operations in photography, and all the necessary apparatus for its practice, are so free from the "trammels of patent law," that many photographers resent the slightest attempt to protect by patent undoubted improvements, and to question the right of an inventor to an exclusive right in any process or thing he may work out. They are more favoured than their brethren in the United States, who from time to time seem to be the victims of some startling attempt to monopolize, by patent, necessary and universally employed agents in the practice of photography.

Not very long since a patent was in operation which taxed photographers to the extent of many thousands of dollars for the use of bromides, in any form or in any proportion, in their collodion, and it was only after years' discussion and litigation that the patent was defeated. More recently a still more startling claim has been made upon American photographers, by which it was proposed to impose a heavy annual charge, levied with circumstances of an extremely offensive and inquisitorial character, upon all who saved silver and gold by precipitating the metal from waste solutions! He who threw down the silver in his washing waters as a chloride, in his fixing solutions as a sulphide, or reduced the silver by zinc or copper into a metallic state—in short, he who saved his precious metals at all by any method of precipitation, or in any kind of vessel—was to be subject to the payment of licence fees for the use of such an operation!

To a looker-on in this country there is something very amusing in such a claim; but to the victims we imagine there could have been but little fun in the matter. Messrs. Shaw and Wilcox having first patented a special vessel for the reduction of the metal in waste solutions, eventually extended the claim to all methods of effecting the same end. In one of their circulars they state, "We claim in our patent the saving and recovering of silver and gold from waste solutions by means of precipitating ingredients, without regard to what kind of vessel it is saved in, or without regard to the substance used to precipitate with." That such a claim was untenable is scarcely necessary to assert. The recovery of the metals from solutions by precipitation was known and practised before the existence of photography as an art. But the attempt was made to enforce this view of the patent, and with harrassing effect. Our esteemed *confrere*, Mr. E. L. Wilson, of Philadelphia, was recently arrested on a suit for libel, in which damages were laid at thirty thousand dollars, for alleging that the attempt was an imposition.

The mode in which this extraordinary tax upon photographers was to be enforced seems to us not less extraordinary than the claim itself. From a circular before us it seems that two methods were graciously accorded to the photographer: in one, he might purchase a share in the company, and then pledge himself to send all his waste to them to reduce at a charge of twenty-five per cent., or he might pay an annual royalty of from ten to one hundred dollars, the exact rate to be fixed by the company, and to enable them to assess the photographer to their own satisfaction he is enjoined to fill up and sign an appended form. In this form the photographer must state the annual sum his business brings in, giving the minimum and maximum gross receipts of the business during past years; the minimum and maximum amount of silver he has used during past years, and the same as to the gold he has used. Photographers who comply with these conditions, and supply details which shall be "found on investigation to be true in all respects," are to receive a licence on payment of the "bonus and annual royalty" the company may determine. Failing this, he is to be brought under the action of the law. The circular in question thus mildly puts the alternative: "You can, if you choose, put us to the expense and trouble of paying you a visit with the United States Marshal, and of closing up your business, seizing you, and placing it in the Marshal's hands: but will you do it? If you do . . . we shall not shrink from enforcing our rights, no matter what the cost."

Whilst we congratulate English photographers on immunity from claims so strange and harrassing, we have pleasure in congratulating our American brethren on their probable escape from the yoke in question. We have just received the decision in a suit which has been concluded, in which the patentees were plaintiffs, and Mr. Lovejoy—auspicious name!—was the defendant. It has issued in favour of the latter: the patent is declared invalid. "The result," says the judge—"that is, the recovering of the valuable metal—cannot be claimed. The means alone can be claimed." He then proceeds to point out that the means defined in the patent are too general and vague, being in effect a "claim to the use of *proper* chemicals in a *proper* vessel." We presume that this decision will put the case at rest, and free American photographers from such an irritating form of taxation. We presume also that it will end the libel suit against Mr. Wilson for expressing his conviction that the claim was an impost, which could not be sustained.

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BENGAL PHOTOGRAPHIC EXHIBITION.

The recent exhibition of the Bengal Photographic Society, we learn from the Journal of the Society, was by far the most successful of the twelve annual exhibitions which have been held, and from the details supplied we learn that, in some respects, it might put to shame exhibitions held at home under much more favourable circumstances. The number of pictures exhibited was seven hundred and seventy-three, and the exhibition remained open for four weeks, during which time it was visited by many distinguished persons, amongst whom are named the Duke of Edinburgh, the Viceroy and Lady Mayo, Lord Napier, the Governor of Madras, and other distinguished Europeans, as well as many native notabilities.

A marked feature of the exhibition, we are told, "was that the collection of photographs was not confined to Indian subjects alone, but included specimens of the work of some of the most successful English and German photographers, sent for competition, besides large collections of interesting photographs of Cashmere, Egypt, Palestine, Java, &c., kindly contributed by the Viceroy, Mr. Bennertz, and others, as well as a few specimens of the new Albert process of phototype in greasy ink, contributed by the Society, and some photozincographs from the Surveyor-General's office."

In landscapes, Mr. S. Bourne and Messrs. Bourne and Shepherd, who have for many years devoted themselves to Indian photography, appear to have borne the palm, taking no less than three prizes in different departments. Messrs. Robinson and Cherrill are said to have run them very close, and received, as we have before announced, the silver medal for landscapes not produced in India. It is worth remark that the only prizes awarded to photographers out of India were the medal to which we have just referred, and one for portraits of children to Mr. Netterville Briggs, successor to Mr Robinson at Leamington. Mr. Briggs is said to have exhibited the finest portraits in the room, and, but for the restrictions in relation to most of the prizes, demanding production in India and membership of the Society, we understand that both Mr. Briggs and Mr. Robinson would have taken further prizes, the judges in their award specially mentioning the portraits of Mr. Briggs as worthy of another prize if it had been at their disposal.

The report in the Journal, speaking of these portraits and of the Adam-Salomon style of portraiture, of which they are examples, says:—

"In portraiture, the series of portraits Nos. 107 to 112, and the portraits of children, Nos. 113 to 118, exhibited by Mr. Netterville Briggs, of Leamington, are unsurpassed by any in the exhibition. The first series are fine specimens of a style introduced a few years ago by M. Adam-Salomon, of Paris, whose portraits created a great sensation in the photographic department at the Paris Exhibition of 1867, where they were first exhibited, and their success has since raised a host of imitators, among whom Mr. Briggs may be considered one of the most successful.

"The peculiarities of this style of portrait are an exceeding brilliancy, combined with most perfect softness and modelling, great depth of tone without heaviness, and complete subordination of draperies and accessories, in order to give prominence to the principal object in the picture, the face of the sitter. Instead of the usual mounts, these portraits are surrounded with a narrow neat gold border with a plain ebony frame outside. The figures are usually seated, or, at most, three-quarter length. No. 111, 'A Lady holding out a piece of sugar to her bird,' is an excellent portrait, full of life and motion, the light and shade on the face exhibiting the most delicate modelling; No. 109, 'Portrait of a Lady,' is a speaking likeness; No. 108, 'Portrait of a Gentleman,' is perfect in pose and modelling.

"For the six portraits of children, the judges have most deservedly awarded the silver medal offered by the president. They are excellent specimens of composition pictures, all being printed from two negatives, and as portraits of children they are unusually successful, the little ones being naturally posed, and apparently quite at their ease, instead of having their usual look of terror, worry, or surprise so common in portraits of children. No. 116, the portrait of a sturdy little lad, fishing rod in hand, with a charming natural landscape background in perfect harmony with the subject, is an exquisite picture."

The same report, speaking of the pictures of Messrs. Robinson and Cherrill, exhibits some qualms of conscience as to the legitimacy of combination printing in photography, either in pictorial compositions or landscapes Of the specimens of the latter exhibited it says, however, that they are "exceedingly fine specimens of thoroughly English landscape scenery, with magnificent cloud effects, and have gained the silver medal offered by the honorary secretary for the best set of six photographs taken and printed out of India. The figures have been introduced in a clever and artistic manner, and all fill a definite purpose. No. 85, 'Edge of the Wood,' is a particularly pleasing composition. We congratulate the Society on having received such excellent specimens of the work of one of the foremost English landscape photographers, and trust that the lessons conveyed in these pictures may be turned to good account by those of our Indian photographers who have enjoyed the opportunity of seeing them."

We are glad to see that several amongst our Indian correspondents take high position in this exhibition. Lieut. Noverre, the report informs us, "exhibits a series of ten exquisite views taken in the neighbourhood of Sumbulpore, all of them clean, brilliant pictures, with particularly fine cloud effects, so skilfully printed that it is impossible to distinguish whether they are from nature or printed in from other negatives. We observe that Lieut. Noverre prepares his own paper and chemicals, and certainly the results do the highest credit to his skill, both as chemist and photographer." Lieut. H. Senior, another of our correspondents, is described as exhibiting a large series of Indian landscapes of unusual excellence.

We are glad to see the Bengal Society continues in active and useful existence after many of the societies at home have ceased to exist or dropped into a state of inanition.

A NEW CARBON PROCESS, AND PHOTO-LITHOGRAPHIC PROCESS.

Those of our readers who visited the exhibition of photographs in Conduit Street last November will remember some fine carbon enlargements by Mr. Window, to which we at the time called especial attention. The patent, then just applied for, is now completed, and we are in a position to place before our readers the details of the process.

In some respects the process in question is closely analogous to some of the earliest proposed carbon processes, the differences consisting in the points which determine success or failure. The principle upon which the prints are obtained is similar to that involved in M. Joubert's enamelling process. Paper is prepared by coating with a hygroscopic organic substance and a salt of chromic acid; it is then exposed under a transparent positive, the portions of the film intended for the whites of the picture being rendered insoluble, hard, and dry, by the action of light. The portions protected by the dense parts of the transparency, which represent the shadows, remain hygroscopic and tacky, so that when a suitable pigment, very finely powdered, is applied, it adheres to the film in the inverse ratio of the action of light. Where the film is thoroughly protected from light, the powder adheres freely, and in less degree through the various gradations of density, the pure lights being quite hardened, permitting no adhesion of the colour at all. As in all cases, the first step in using a process of this kind is the production of a transparent positive, it lends itself especially to the production of enlargements, as the necessary positive is as easily produced in enlarged proportions as in the size of the original; and as the texture of the picture readily admits of effective retouching in crayons, the process is essentially suited for producing permanent enlarged portraits, of the character of those exhibited last November. We append the details as described in the specification:—

"My invention consists in applying both the chemical action of chromic salts on soluble organic bodies and the treatment with powdered pigments of surfaces prepared with hygroscopic compounds, combined with a soluble chromate after insolation, through a *cliche* (which for convenience I call a negative), for the production of photographic impressions on paper, cardboard, wood, ivory, canvas, and other surfaces, by the means hereafter described.

"I prepare a solution consisting of albumen and some hygroscopic substance, such as honey, gum, sugar, glucose, or of several of these substances combined, according to circumstances, and a soluble chromate. The solution I prefer using as most suitable for general purposes is composed of—

Honey	2	parts
Glucose	4	,,
Albumen	3	,,
Dextrine	1½	,,
Saturated solution of bichromate of ammonia	7	,,

This solution of albumen, a hygroscopic body, and a chromate, I call the sensitive solution.

"I spread this sensitive solution upon the surface which is intended to receive the photographic image, sometimes with a brush or other convenient means, sometimes—after thinning it with water—by pouring it on like collodion. I then dry it by means of heat, and expose it under a negative to light. When exposed a sufficiently long time, I brush powdered pigment over the surface until the image is sufficiently developed, and proceed to fix the pigment on the surface of the paper or other material. I effect this by laying the print, immediately after being developed, in a flat dish, and pouring alcohol, naphtha, or some other such agent over it, wetting both back and front; the print is then hung up to dry spontaneously, or a gentle heat may be employed. When quite dry, it is immersed in a dish of water acidulated with hydrochloric sulphuric, or some other acid which will dissolve out all the soluble portion of the coating. The print is then soaked for a short time in clean water, and finally passed through a dish of water rendered slightly alkaline with ammonia, to expel any trace of acid.

"If I want the finished print to have a glazed surface, such as that produced by silver photographic printing on albuminized paper, I use collodion alone, in lieu of alcohol, to fix the picture. In all other respects the manipulations are the same as hereinbefore described.

"Another mode of securing pigment prints upon paper with a glazed surface is to prepare a sensitive solution similar to that hereinbefore described, omitting the albumen. A glass or metal plate is coated with this solution, insolated under a negative, and developed with powdered pigment, as is done in some known enamelling processes. After development, collodion is poured over the coated surface, and left to dry; when perfectly dry it is transferred to gelatine paper or to albuminized paper, according to known methods. I have found that the developed print may be transferred from the sensitive coating upon which it has been developed to other surfaces, provided that the latter have received some coating of a sufficiently glutinous or tenacious nature to retain it. Paper coated with a mixture of one part of albumen and three of water, or with one part of gelatine in twenty parts of water, answers for this purpose, all that is necessary to effect the transfer being to bring in contact the developed print and the transfer paper, under a somewhat heavy pressure, and the application of moisture, such as wet paper or a sponge, placed on the back of the print. Any plane surface to which a coating of adhesive compound has been applied will receive the transferred print as well as paper."

The application of the principle involved in this process to the transfer of the photographic image to the lithographic stone is tolerably simple, and, as will be seen, the image so transferred will be an image with due gradation of half-tone. The great difficulty of producing photo-lithographs in half-tone is, however, rather in the mode of printing from a stone, than in the producing the image on the stone. With a suitably grained stone, however, and such a method of transfer, sufficient gradation might be secured, it is probable, to suit many subjects. The method of transfer is described as follows:—

"I have also found that the developed print may be transferred to stone or zinc, but for this purpose a somewhat different treatment is necessary. The print must be developed with a powder of a fatty or resinous nature, or with a pigment powder containing a notable quantity of a fatty body. Asphalte mixed with one-fourth its weight of paraffine or stearic acid, and reduced to fine powder, answers for this purpose, as does also lamp-black containing about one-fourth of its weight of stearic acid. The print developed with these or analogous powders is laid down upon the stone, heated to a temperature sufficient to melt the fatty body mixed with the pigment, and passed under the rolling-press. On damping the back of the print the fatty powder is left in contact with the stone, and adheres thereto if the heating has been properly managed, while the moistened sensitive compound likewise adheres to the stone, and forms a protective coating against the fatty matters, when the stone is 'rolled up' in the usual way.

"From such a prepared stone a large number of impressions may be taken."

MEINERTH'S MEZZOTINTO PROCESS.—DETAILS OF MANIPULATION.

BY CARL MEINERTH.

Although it is almost three years since I published the specification of my patent, yet I see, by the various enquiries about it in the journals, as well as in letters directed to me, that the process, owing to its simplicity and beautiful results, is still receiving a considerable share of attention and interest.

I considered my process so easy and simple that I presumed everybody must succeed as well as myself (at least), and therefore thought further explanation superfluous. However, as many seem not to obtain good results, and might believe that I use particular means, while others, again, try to invent and supply such means, I beg to give herewith a plain and full account of my proceedings wherewith prints (such as I have sent to you recently*) are uniformly realized.

After three years' practice and experimenting, we still use nothing but "a piece of glass and sunshine" (as Dr. Liesegang tersely had it). Any auxiliary accessories or apparatus—such as boxes to shade the light off, printing-stands, and other things proposed—we found not only not to facilitate the process, or yield a better result, but to be only cumbersome, and, in fact, useless.

We print mezzotintos in clear sunshine only, and my son can then generally print three or four hundred in one morning without spoiling more than five or six. (Of course it was never supposed that the mezzotintos should supplant all common photographs—indeed, not more so than any other special process will; yet all my customers prefer them, and seldom call for anything else.)

We lean the printing-frames on upturned flower pots; their roundness admits of any direction towards the sun without moving them. After a little practice, the hand replaces the frame almost automatically to the same position. A slight change does no harm; too much change produces, of course, double lines in the print. This part of the proceedings offers no difficulty; but a well-known photographer in Ohio declares my process impracticable until I invent a printing-table to be driven by clockwork, in order to keep the prints perpendicular to the sun! Yes; if my patent would embrace some great machine, it would be considered here a "big thing." Some people cannot see any beauty in simplicity. On the other hand, a photographer in Minnesota wrote to me:—"I thank you especially for the simplicity of the process, which is the beauty of all processes."

The thickness of the interposed glass depends on the picture or the negative. As a rule, the smaller the head or face, the thinner the glass. Our thinnest glass is about the thickness of two of my cards together. Such small standing or sitting full figures as were taken several years ago on the first cartes-de-visite would require the very thinnest glass; they are rather unfit for the process. For the present larger size, any common thin negative glass will answer; while for heads over one inch, even thick or double glass is required. Much of the beauty of the print depends on the proper choice of the glass. A little experience teaches it soon.

Now a few words about the negative. We take no especial pains to make negatives on purpose for mezzotint printing: any commonly good negative is sufficient. In one of his valuable contributions to your Journal, M. A. de Constant had the goodness to speak favourably of my process; but in this, as well as in a later letter (Vol. XIII., Nos. 553 and 567), he expressed the opinion that I use hard negatives, and that such can be utilized in my process. Now I must beg to dissent entirely in this point. I can do nothing with such negatives—indeed, never keep one whenever it can be replaced by a soft one. All our negatives are rather more soft or transparent. I dislike nothing more than intensifying (as already expressed in one of my former letters), and firmly believe that it can be entirely abolished, as even instantaneous and other undertimed negatives can be brought up sufficiently with silver during developing. (I enclose a stereograph from such a negative, taken four years ago in October, at 4 P.M., and not intensified. The subject shows how quickly it was taken. Some of the "anti-sea-gullers" will say that my fowls were stuffed!) After this digression, I have only to remark that, as in common printing, a negative full of clear detail and gradation of shadows is the best also for mezzotinting. I shall be happy to send to M. de Constant some proofs of this when I learn his address.

In conclusion, I trust that this exposition of my process will induce many to try it. It is certainly simple enough, and in result beautiful. It is still a true, pure, unpolluted photograph, and it repays fully the little trouble bestowed, and I cannot but feel happy that it was my lot to have started and worked out to practical use and purpose a process which, even if ever before known in principle or idea, would otherwise almost certainly have remained dormant.

Newburyport, Mass., U.S., April, 1870.

A CONVENIENT DARK TENT.

During the last ten years I have tried almost every kind of tent or box which has been invented for out-door wet photography. I first made up a real tent, such as in India is called a "Paul," stretched over a horizontal pole supported by two perpendicular ones, pegged down at the sides, and with a curtain at each end. This, no doubt, if you have plenty of time and locomotive power at your disposal, is the best thing you can have, but it is bulky, and takes up so much time in pitching, striking, and packing up, that it is not suitable for ordinary purposes.

I then tried several kinds of "box tents," but I found them so uncomfortable to work in, so dusty, and so frequently getting out of order, that I discarded them. The last which I got was one of those ingenious inventions which profess to hold every article which you can require, each in its proper position, and to be set up and packed up in no time. Alas! I soon found that I had made a bad investment. The box, when filled with the necessary apparatus and chemicals for taking twelve by ten negatives, and stowed in its deal case for travelling, was so heavy that it took two stout fellows to lift it, and I always had to hire a cart to carry it; the jolting of the cart would cause the (so-called) water-tight bath to leak, and the stoppers to come out of the bottles; and what with getting the affair in and out of the cart, on and off the tripod, making safe the bath and bottles, &c., I had more trouble with it than with my original tent. Eventually this box came to grief somehow on a railway journey, and was delivered from a van at my door irretrievably smashed, for although I had written "Glass with care" upon the outside of the case, the railway porters had treated it with as little consideration as if it had been an old portmanteau.

This sort of box tent is, however, a good substitute for a dark room, where you cannot get one, and your subjects to be photographed are near the house; but it seems to me that the inventor of it disregarded the maxim, "Divide et impera:" half a dozen light packages are much more manageable than one very heavy one.

Last year I adopted a very simple apparatus, which I have found, upon the whole, the most convenient, and, with your permission, I will describe it. A stout tripod, about seven feet long, each leg fastened by a hinge to a small triangular block of wood at the apex, supports a cover (or tent) made of two or three thicknesses of black and yellow calico somewhat longer than the legs of the tripod, one side made to open and close light-tight; a triangular or semi-circular table with three legs fits into the recess formed by the tripod in front, upon which you arrange your bath, tray, chemicals, &c., according to your fancy. You can have your yellow windows anywhere; I have one on each side of the leg of the tripod in front. You can either work sitting down, or, if you prefer standing, make your tripod and cover a little longer. Three guys of stout string attached to the apex of the tripod by a projecting bit of iron, and pegged down to the ground, are amply sufficient to keep it steady. The apparatus is susceptible of various modifications, which experience may suggest to the photographer. Two moderately sized boxes to hold your camera, plates, chemicals, &c., a water can, and the camera tripod, complete your equipment, and I do not think you can do comfortably with less.

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* How were they?

Beware of "water-tight" baths for your silver solution; I have never yet had one that I could depend upon. I advise you either to carry your nitrate of silver solution in a bottle, and pour it into the bath and decant it back when your work is over, or carry your water-tight vessel carefully in your own hands.

Hoping that the above hints may be of service to some of your readers who are getting their traps ready for the coming summer, I shall only add, "Experto Crede."

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COLLODIO-BROMIDE MANIPULATIONS.

BY M. CAREY LEA.*

Sensitizing the Collodion.—I showed, in my remarks a month since, that it is possible to introduce the whole of the silver into the collodion in a state of solution. This has often been spoken of as a very desirable thing, but one, unfortunately, not practicable. It is, however, not only practicable, but easy. Sixteen or eighteen grains of nitrate of silver finely powdered will easily dissolve in a quarter of an ounce of boiling alcohol of ·815, and such alcohol is strong enough for the collodion. Of course, if the operator desires to use a still stronger alcohol for making the collodion, there is nothing to prevent him from doing so. In my own case I use only alcohol of ·815.

I take a large test-tube capable of holding several ounces, large enough, at least, that the alcohol shall only fill it about a third. I introduce the silver nitrate in fine powder and the alcohol. If the quantity is at all considerable, I put in all the nitrate and half the alcohol; boil it; as soon as it boils, remove it from the flame, shake it well by a lateral movement, which, while it mixes up well, does not cause drops to spurt out; let settle for a few moments, and pour off the whole liquid into the collodion at once, leaving some undissolved nitrate at bottom. As soon as the hot solution is in the collodion, I shake up well for about a minute; I then add the rest of the alcohol to the residue in the tube, and repeat the operation. This time the remains of nitrate dissolve completely. This separating the alcohol into two parts is only for convenience, it is not necessary. In making experimental trials with quantities of an ounce or two of collodion, I do not divide the alcohol, but dissolve the whole of the nitrate by one boiling.

Management of the Mixture—Dense Films.—In the directions which I gave in my previous paper, I recommended to sensitize the collodion with sixteen grains of nitrate of silver to the ounce, dissolved as already explained, and to use at the end of twenty-four hours. This mode of proceeding gave very transparent films, and as these are never as sensitive as opaque ones, I have been studying the conditions under which the latter can be obtained.

I have got much better results by increasing the proportion of silver to eighteen grains. Large as this excess is, and all in actual solution when introduced into the collodion, the controlling power of the aqua regia is so remarkable that there is not the slightest tendency to fog. When this quantity of nitrate of silver is used, the time may also be considerably reduced. At the end of six or seven hours, if the mixture be vigorously shaken at intervals, a moderately dense film is got, but the condition of the mixture decidedly improves by keeping up to twelve or fifteen hours. From twelve to fifteen hours is what I recommend most. With eighteen grains of nitrate of silver, two drops to the ounce of aqua regia will be proper.

In a careful comparative trial between a film made with a collodion sensitized with sixteen grains of nitrate of silver and kept twenty-four hours, and one sensitized with eighteen grains and kept fifteen hours, it was judged that the latter was at least twice as sensitive. With equal exposure the development of the latter was effected in one-third or less time, and gave more detail by a good deal in the deep shadows. In fact, though there is no doubt that good pictures may be developed upon transparent collodio-bromide films, yet these latter are always greatly inferior in sensitiveness; this is another of the many points of advantage which the process here described has over that in which bromides are used in excess.

The mixture, after sensitizing, will require to be shaken well about four times at intervals before using, each shaking lasting from three to five minutes. After the last shaking the mixture should rest about an hour before filtering. It is a mistake to let it rest two or three hours after the last shaking and before using; such a course will sometimes lead to slight irregularities of the film, visible, after the plate has set, by holding up to the light and examining closely; and in the last plates of the batch this may get to the extent of producing mottled films, the effect of which will be visible in the skies of the developed plates.

The best method of filtering is to put clean, fine sponge into the neck of the funnel, and to cut filters of fine, close linen stuff, freed from dressing or size by boiling with soda (either washing soda or very dilute caustic soda), and then washing thoroughly out.

The pouring off of the plate should never be returned to the same bottle, or, after a few plates, motes and knots will be found in the film. The best manipulation is as follows. Provide two clean vials, filter the collodion mixture into one, then transfer the funnel and filter it to the other, and after coating the plate pour off into the funnel. The pourings off will thus filter into the second vial, and will be ready for use when the first vial is exhausted. If the contents of this second vial, when used for coating, show a tendency to mottle, thin them a little with concentrated ether. One source of mottling is the use of a too watery alcohol or ether; the evaporation from each plate leaves a residue more and more charged with water. The plates should have an edging of india rubber dissolved in benzole applied before the collodionizing.

Litmus as a Preservative.—When a preservative of gum and sugar is used, great sensitiveness is attained, but the negatives want vigour, and are often too flat. It therefore becomes necessary to introduce a substance capable of giving a sufficiency of force and brilliancy. Many substances I have found capable of doing this; unfortunately, almost all of them largely diminish the sensitiveness of the film.

Two substances, litmus and the well-known tannin, are capable of giving excellent results. For a time I scarcely did justice to tannin, and this because I used it in the heavy doses ordinarily recommended. But when it is kept down to two or two and a-half grains per ounce of both, and used with six or eight times its weight of gum, it does very well indeed. Nevertheless, after a great many most careful comparative trials, I feel constrained to give the preference to my own preservative, red litmus, and this for the following reasons:—

1. Except in long exposures and under trying circumstances, it completely prevents blurring, and always greatly diminishes it. The plates are, therefore, strikingly cleaner in the shadows.

2. In controlling contrasts it exhibits a moderate but distinct superiority over the tannin.

3. As to sensitiveness, the two are very near together, but, after very extended trials, I can say that what advantage there is lies on the side of the litmus.

Persons in trying litmus for the first time will be very apt, when they proceed to develop, to think they are going to make a failure. The first effect of the alkaline solution upon the red plate is to turn the red litmus blue; it thus looks darker, and might be thought to be going to fog. As the plate lies in the developing bath, and the solution is made to flow to and fro over it, a bluish cloudiness appears in the liquid; this looks as if something was going wrong, but it is only the litmus washing out of the film. Sometimes, also, the solution penetrates the film unequally, and gives it a spotted or patchy look. All these indications mean absolutely nothing. When the plate has reached its proper development, and is thrown into the fixing bath, it comes out brighter and cleaner than almost any other form of dry plate, and exhibits also the softness characteristic of this process.

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* *Philadelphia Photographer.*

The proportion of litmus directed in my previous paper may be doubled if desired. No diminution of sensitiveness results, as I have most carefully tested and proved; and as the plate is a darker red, the protection against blurring is increased proportionately.

Fixing.—The peculiarity of collodio-bromide plates as respects fixing has never been sufficiently pointed out. The bromide of silver dissolves out in the hyposulphite bath much more easily, and the image itself appears to be more easily attacked than the image on bromo-iodized plates. Hence, in the earlier days of the collodio-bromide process, it was advised to look to the alkaline development for a thin image only, and intensify with silver and pyro. But those who will use the methods I have described will get all the density they want by the alkaline development alone; indeed, without care, too much density may result; and the reducing tendency of the fixing solution may be removed by using it very weak After a number of trials I have found the best strength to be about one-sixtieth, one ounce of hyposulphite to fifty or sixty of water. Bromide of silver dissolves so much more easily than iodide that a collodio-bromide plate is fixed with this solution in the same time as an ordinary bromo iodized film in a much stronger. The weak solution has so little action on the image that the plate may be less in over the necessary time for cleaning without injury. I prefer, after using the fixing bath for twelve or fifteen plates, to reject it, and pour in fresh. It is almost unnecessary to say that with no plates should the fixing solution be used for a second set of plates after standing.

The addition of the hot solution of nitrate of silver to the collodion is not attended with any inconvenience as might have been supposed; on the contrary, the formation of the bromide of silver is favoured thereby. The whole mixture becomes tepid, at which temperature chemical decomposition advances, of course, more rapidly. In operating with considerable quantities it would, doubtless, be well to let the solution cool a little, but a little only, and to add it in two or more portions. But with small quantities, as above explained, this is unnecessary. The vial should be well closed with a well-fitting cork, which I find preferable to a glass stopper, using, of course, a new one each time, and securing a very close fit.

[Since receipt of copy of the foregoing article, we have received the following:—]

Acidification of Collodio-Bromide.—The very bad weather which we have had has greatly interfered with my examinations; it is only in perfectly cloudless weather that a series of plates can be exposed with a certainty that each gets an exactly equal exposure. I, however, have succeeded, within the last few days, in making some sets of exposures.

One very important result attained is, that aqua regia is not only the best substance for acidulating the sensitized collodion, as I have already stated, but apparently the only acid capable of giving really satisfactory results. Neither nitric acid nor hydrochloric, used separately, can be relied upon to keep off the fogginess. On the other hand, with aqua regia I always get a clean and brilliant image. Continued experiment only serves to develop farther its utility, and I do not expect ever again to expose a collodio-bromide plate that has not been thus treated.

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MANIPULATIONS IN JOHNSON'S CARBON PROCESS.*

I.—Non-inverted Pictures on Paper with Plain or "Matt" Surface.

9 *Preparation of the Temporary Support.*—The plate of glass or metal employed as the temporary support must be coated with a fatty or resinous body, of such a nature that it shall remain solid or unfused by the action of the warm water used for developing the picture, but shall fuse at a higher temperature; or that shall have sufficient tenacity to retain the picture upon the plate during development, but shall have less adherence to it than the film has to the paper by which it is backed or mounted.

10. *Composition of the Fatty Body.*—Dissolve, by means of heat, equal parts of bee's-wax and yellow resin in oil of turpentine, say three drachms of each to the pint of essential oil.

These proportions are not absolute. The composition of the wax of commerce varies. It is rarely pure, and hence variable quantities of the resin are necessary.

As a general rule for the guidance of those who desire to prepare this compound for themselves, it may be observed:—

1. That bee's-wax alone will not retain the developed film upon the plate during drying, even at ordinary temperatures, still less when dried in a hot room. The film cracks and peels off under such circumstances. This is observed to a still greater degree when the wax is impure—that is, when adulterated with tallow or fatty matters—fusing at a lower temperature than pure wax.

2. On the other hand, resin alone does not allow of the separation of the film from the plate when the transfer paper has been attached to it The resin must therefore be added in such quantity that the adhesion of the wax may be increased, without rendering that adhesion too great. If this proportion be duly adjusted, the film will remain on the plate without cracking or peeling, even when dried in a hot chamber, and will leave the plate readily when the applied transfer paper has become dried, without the application of any force.

11. *Application of the Fatty Body.*—Take a plate of glass or metal, ground or grained on one side; dip a piece of clean flannel in the fatty body and rub it rapidly over the ground surface of the plate; then take another piece of flannel and polish off the grease, leaving the plate quite clean, but covered by a minute layer of the compound. This should be quite free from marks or streaks, for it must be observed that the print will take a most perfect impression of the surface of the support, and if this be polished so will the face of the print, and *vice versa*; in fact, the grain of the plate will be impressed permanently upon the print, as will every mark, scratch, or indentation. To have perfect prints we must have a perfect surface to our support.

The plate thus prepared constitutes the temporary support, and is now ready for the reception of the exposed pigment paper.

12 *Mounting the Exposed Pigment Paper upon its Support.*—Lay two flat dishes end to end upon a table in front of a window, which need not be covered with a yellow screen or blind if the paper be kept face downwards when removed from the printing-frame. Put a stool of wood in the right hand dish, and upon it place the prepared plate to serve as the temporary support; fill the other dish with clean filtered water, and immerse in it the exposed paper; it will curl inwards—that is, towards the film; allow it to remain, and in a few seconds it will become straight, and, if left undisturbed, will curl outwards—that is, towards the paper (before this occurs, turn it over and remove all adhering air-bubbles, if any); lift it up by the two opposite diagonal corners and drop it upon the plate, taking care that the pigment paper first touches the plate at the centre diagonal line only, when drop the two corners simultaneously,

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* Continued from p. 234.

so that the waves of water passing from the centre to the opposite ends may flow freely outwards, carrying with them all air from between the surfaces of the pigment paper and the plate; when this is done, place two fingers of the left hand upon the left-hand edge of the paper, and, with an india-rubber scraper in the right hand, with a motion from left to right scrape out the water from beneath the surfaces of the pigment paper and plate; do this two or three times if necessary; then turn the plate end for end and repeat the operation, so as to drive out all the air from between the surfaces. This can be done with perfect certainty after a little practice, but if it be not done thoroughly the process fails. The pigment paper and its support are then laid aside; other similar plates are treated in the like manner, and are laid in succession upon one another, so as to form a pile of about twelve plates; when these have been allowed to remain for ten or fifteen minutes, the operation of development may be proceeded with.

13. *Development of the Picture.*—This is best effected in the developing vessel. It is filled with water at 100° Fahr., the gas jet or spirit lamp in the furnace is lighted, the thermometer inserted in its place, and the twelve plates, with the exposed pigment paper mounted upon them, are immersed in the grooves prepared for their reception. As soon as the twelfth plate is immersed, take out the first, and lay it horizontally upon the top of the others. Raise the edge of the paper, and if it yields readily, pull it up steadily and rapidly with an equable motion, until it leaves the plate Throw the paper aside into one of the flat dishes, and taking the plate by each end, move it rapidly, to cause the water to flow over it in waves from side to side: or raise it in the left hand, and with the other, cast waves of water over the picture until all bubbles, if any, have been removed Unless these be removed, the development, or washing away of the soluble pigment compound, will take place unequally; and the picture, where protected by the air bubbles, will have spots of greater intensity than on the rest of its surface. When the bubbles have been removed, replace the plate in its grooves, and proceed with the second plate as with the first. The softening of the pigment compound takes place more or less rapidly, according to the amount of moisture within it, and according to its degree of solubility. This varies somewhat according to the nature of the pigment and the condition of the atmosphere during the drying; but this variation, which was extreme with the old tissue, which required twelve hours or more, is reduced to a minimum in the case of the pigment paper, which dries in less than an hour, and consequently is, by that proportion, less sensible to atmospheric or other external influences.

When the whole of the twelve plates have been thus treated, the first is again laid horizontally, and examined; and the development, if not complete, is accelerated by shaking the plate, and thereby creating motion in the water, in order that the removal of the soluble pigment compound may be aided by mechanical means, as well as by its solubility

The sufficiency of the development is seen by the cessation of the running streaks of the dissolved pigment compound.

If the picture be satisfactory before these streaks cease to flow, the development may be arrested by holding the warm plate horizontally in the air for a few seconds; then plunging it, still in the horizontal position, into a weak solution of alum, placed in one of the two shallow dishes; and, after a few moments' immersion in this solution, into the cold water bath. Reliance, however should not be placed upon this mode of treatment. Perfect pictures can only be obtained by a perfectly regulated exposure. Fortunately, a large margin is allowed us in this respect.

If, after the cessation of all streaks, the picture is still too dark, it should be placed in cold water until the whole day's work is finished; and then all pictures too dark from over-exposure should be treated together. To effect this, raise the temperature of the developing bath to 120° Fahr., and place the too-dark pictures in the hot water, moving them up and down. If this do not reduce them to their proper tone, plunge each for a few seconds into a bath of the chloride of lime diluted with two parts of water; and again treat them with the hot water. This will be seen to have an important action upon the pigment compound, which, fixed by reducing agents, appears to be again rendered soluble by those which have an oxidizing or chloridizing action. The immersion in the hot water is continued until all soluble matter is removed, when the pictures are removed and placed in cold water—the colder the better.

The cold water should be placed in the rinsing bath, having grooves to receive the plates. As already said, when the development is complete, the plate and picture may be plunged for a second or two in the alum solution, and then immersed in cold water, and left for some time to soak, in order to remove the last traces of the chrome salts. The strength of the alum solution is material: the weaker the better. If too strong a solution be employed, the picture film is rendered too dense, and insoluble; and in this case adheres less perfectly to the transfer paper, to be subsequently applied.

Instead of employing a separate bath of alum, the cold bath may have a small quantity of that salt dissolved therein, and if the solution be sufficiently weak, the pictures, on their temporary support, may remain therein, until the last traces of the olive-coloured chrome compound are removed. The addition of the alum, and its prolonged action, seem to favour the removal or decomposition of this objectionable compound, the presence of which, if allowed to remain in the prints, greatly detracts from their brilliancy, and gives rise to those greenish blacks which, having been commonly seen in, are considered essential to, pure carbon prints.

When freed from the olive tint, the plate and its film must be rinsed in pure water. A rose jet, or running stream of water, is often beneficial, as in some cases small particles of dust or grit adhere to the insoluble gelatine film, and can be removed by a stream of water without injury to the film itself. The same mode, if water at 100° Fahr. be used, is most efficacious in removing the bubbles of air before referred to. This method, of course, requires a vessel placed above the level of the developing bath with an india-rubber tube, and small rose, and cock. It is a refinement of the process already described, and by no means essential to its successful working.

When efficiently washed, the plate and print are placed in a rack to dry, if possible in a warm current of air.

(*To be continued.*)

PHOTO-MECHANICAL PRINTING PROCESSES.

BY LIEUT. J. WATERHOUSE, R.A.

PHOTO-LITHOGRAPHY IN BERLIN.

THERE are several exceedingly clever photo-lithographers in Berlin, and I found more established there than in any other city I visited. I called on Messrs. Burchard Brothers, Korn, Kellner and Gieseman, and Falk Brothers, and obtained some general indications of their processes, which all give very good results. Those of Herr Korn are particularly fine. Messrs. Falk Brothers are more occupied with photo-engraving in relief and for plate printing.

Messrs. Burchard Brothers' Photo-lithographic Establishment.

Messrs. Burchard Brothers were kind enough to show me some very fine specimens, and to let me see their establishment, but did not wish to disclose their mode of operating. They said, however, that they worked direct on the stone, and did not require a *cliche*; their proofs were exceedingly sharp and good.

Their apparatus was very simple; consisting of a large camera resting on a firm stand, at one end of which the plan-board was fixed. The lenses used were by Busch, of

Rathenow. They operate in a partially glazed room, so as to have a direct light on the plan. Their lithographic presses were mostly of the French pattern, and Herr Burchard told me they were better than the German. I saw some specimens of a curious application of photo-lithography to the printing of patterns on different stuffs, such as linen, silk, calico, &c., which could be used for various purposes; thus, on calico for the borderings of petticoats, on silk for the ends of scarves, imitation lace, &c.; some of the results were very good indeed.

I also saw a zinc plate in relief, which was very successfully done, and almost without re-touch; it was far superior to the work of the same kind I saw at Paris.

Herr Korn's Photo-lithographic Establishment.

Herr Korn showed me the finest photo-lithographs in line that I have ever seen; he was also obliging enough to show me some of his methods of working, and to give me a great deal of general information on the subject. He worked for a long time in conjunction with Mr. Osborne, of Melbourne, who introduced a process of photo-lithography almost simultaneously with the introduction of the process of photo-zincography at Southampton. Both processes were very similar, but Mr. Osborne mixed albumen with the gelatine for preparing the paper, with the idea of leaving an insoluble coating on the transfer after the development, so that when transferred, it might stick to the stone, and not be liable to slip, as is sometimes the case when the unaltered gelatine has been removed from the surface of transfers made by the other process. Herr Korn worked this process for a long time, but not finding it give sufficiently good results, he has abandoned it for another, which he considers better. He has been entrusted by the Prussian Government with the reproduction, by photo-lithography, of the drawings in pen-and-ink and water-colour sketches executed by the members of the Prussian Mission to Japan; these drawings are of large size, and the reproductions in line and by chromo-photo-lithography are most successful. The peculiarity about the work is the absence of flatness and a difference of shade in the lines, which adds much to the picturesqueness of the results; yet the lines, though broken, are clean cut, and there is no trace of that unpleasant woolliness so common in photo-lithographs of drawings. Herr Korn only occupies himself with artistic work in line, chiefly copies from drawings. I passed some little time in his studio, and saw some of his manipulations.

The apparatus he uses is a strong rigid camera resting on a solid table-stand, at one end of which the plan-board is fixed. The plan-board slides backwards and forwards, and its distance can be regulated by a scale. He works in a glass room on the roof of his house, using ordinary daylight, but has a calico screen above the plan. His dark rooms are spacious; one small one contains the nitrate bath alone, the other, a larger one, is used for developing the plates and the ordinary operations of his process. He uses a horizontal trough for the nitrate bath, and told me that its use was universal in Germany. His negatives are very large, and are exceedingly good. They are intensified with pyrogallic acid and silver only, fixing with weak cyanide before intensifying. The negatives are afterwards transferred to other glasses, so as to become reversed, to enable him to print directly on to the stone. I saw this process, but am not at liberty to disclose it. Herr Korn is a very careful operator, and takes the greatest care that his negatives shall be perfectly clear in the lines, rejecting without mercy one that is not.

For the photo-lithographic process, he told me that he used asphaltum, and works directly on to the stone. The exposure is very short; the unaltered asphaltum is then removed with a solvent, and the stone is prepared with gum and acid in the ordinary way.

Herr Korn gave me one of Mr. Osborne's transfers; it was quite different in appearance to those obtained by the Southampton process, the surface being quite brilliant.

He also gave me a formula for transfer ink, which may, perhaps, prove useful:—

Stearine	18 parts
Mastic	18 ,,
Lampblack	12 ,,

mixed with oleine instead of varnish.

He recommended the use of Swinborne's gelatine.

He always prints on genuine China paper, which gives much better results than the imitation paper. It is, however, very difficult to get good paper even from China, as it is so mixed with impurities; but it is impossible to print on ordinary paper, as the prints want force, and it is very difficult to find printers who can print photo-lithography properly.

Messrs. Falk Brothers' Establishment.

Messrs. Falk showed me some fine specimens of photo-engraving in intaglio and in relief, and I also saw their plates. They were also good enough to give me a general idea of their process, the principle of which is as follows:—

A glass plate is coated with a mixture of bichromate of potash and gelatine, dried, and exposed under a negative of the engraving to be reproduced. The exposed plate is then plunged in water. The parts of the gelatine coating which have not been exposed to light swell up and rise in relief. A plaster cast is made from it, and shows the reverse: the black parts of the negative appear hollow; the transparent parts—that is to say, the lines of the drawing—are in relief. This plate is, therefore, a matrix. A cast in wax is taken from it, and by electrotyping the wax mould a copper printing block is obtained, from which it only remains to cut out the clear whites with a gouge. In a somewhat similar manner copper-plates may be made for printing in the copper-plate press.

I also saw a great many zinc plates in relief, which were very good, but could not find out by what means they were produced.

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Recent Patents.

IMPROVEMENTS IN TAKING SEVERAL PICTURES ON ONE PLATE.

BY DAVID TREVOR.

The following invention received provisional protection only:—

The object of my invention in connection with photography is to enable the operator to take several views of a sitter or object from different positions, or several sitters or objects, as may be desired, on the same sensitized plate with one sensitizing, as also in the mode of mounting such photographic pictures for suspension or exhibition, or for pocket cases, or photographic albums (that is to say):—

Firstly. My invention relates to my improved apparatus for holding the sensitized plate, which consists of a circular disc of wood or other suitable material working in a corresponding sized hole formed in an outer rim or frame, by preference square, for easy application to the camera. In such disc a square opening is formed fitted with a door for securing the sensitized plate after being placed in the said opening, whilst the front of the apparatus is obscured to the extent of the eccentric space requisite for taking the intended picture, which opening is obscured by a darkening slide or cap in the ordinary way, to keep the light from the plate until the object or sitter is in position. And for description I will suppose that the disc is divided into six or any desirable number of divisional parts, and one picture or view of a sitter or object is taken; the cover will be then put over the lens, or the dark slide advanced, and the disc carrying the sensitized plate revolved, say, one-sixth; the object or sitter is again arranged, and the cap removed or slide withdrawn, and the new view taken, and so on until the divisional series is complete, when from the said plate any number of negatives may be taken in the ordinary way.

Secondly. My invention consists in mounting such pictures for suspension or exhibition, in which case the whole series may be exposed on a revolving disc so as to be turned in succession upwards, or one or more openings may be formed in the upper part of an additional disc, and by revolving the compound picture underneath each portrait or object may be brought successively in position.

Lastly. In mounting such concentric series of views or pictures in photographic albums, I purpose for the leaves of such albums to be so arranged as to permit of the whole to be seen at once, by turning the album around, or by revolving the picture so as to bring the portrait or objects in view, while the album or case proper may be stationary.

TRANSFERRING OF PHOTOGRAPHS TO VARIOUS SURFACES.

BY F. W. GRUNE.

The patent for the method of transfer here briefly indicated was not completed :—

The object of this invention is to transfer photographs to wood, metal, ivory, and other materials or surfaces for engraving purposes, or for purposes of ornamentation.

I obtain a photograph by the ordinary collodion process, and apply or superimpose it face downward on the wood, metal, ivory, or other surface to which it is to be transferred, fixing the photograph by means of gum, albumen, gelatine, or other ordinary adhesive substance. I apply alcohol on the back of the photograph to remove the water or humidity, and I apply ether, whereby the collodion is removed and the metallic picture alone remains on the surface; that is to say, the transfer lies on the said surface in a condition of a metallic image or picture without the collodion. Thus the transfer is so made as not to leave any layer or trace of foreign substance or discolouration thereon likely to prejudicially affect the surface for its intended purpose of engraving or ornamentation. The block, plate, or surface can then be engraved, or the image may be fixed by varnish or otherwise for ornamental purposes.

PHOTOGRAPHIC PIRACY OF ENGRAVINGS.

We condense from the *Birmingham Daily Post* the report of a case heard on Thursday week at the Public Offices, Birmingham, before Messrs. T. C. S. Kynnersley and S. Thornton, when George H. Plante, picture frame maker, was summoned, on the complaint of Messrs. H. Graves and Co., for infringing their copyright and selling and distributing photographic copies of the following engravings :—"The Railway Station" (three copies); "Accepted—I take this opportunity" (five); "The Offer — perfectly satisfactory" (five); "The Connoisseurs" (four); "The Nutcrackers" (two); "My First Sermon" (one); "My Second Sermon" (one). The defendant pleaded not guilty to selling the copies.

In stating the case to the Bench, Mr. Motteram said, in this case there were no less than twenty-one summonses against the defendant, and for some of the pictures vast sums of money had been expended by Mr. Graves. There were persons, however, who appeared determined to destroy Mr. Graves's property, and notwithstanding that on former occasions penalties amounting to £1,000 had been obtained by Mr. Graves against those individuals, he had been obliged to go to a very heavy expense—so artful and tricky were those persons in endeavouring to elude detection—to discover the piracies. Though Mr. Graves had never pressed for a higher penalty than £5, and though the magistrates put it at one-half, and sometimes as low as 30s., those convictions had been appealed against and carried to the higher Courts, so that the penalties had been more than balanced by the costs in those cases, and he had gained nothing by the proceedings. Still he would not care about that, if he could effectually stop and put an end to the practice. For some time he did succeed in doing so, but those parties had now become more bold than ever, and it was found that the practice was again seriously prevailing to the detriment of Mr. Graves. Their Worships would be amused at the mode in which the defendant had acted—very cleverly, no doubt, as he imagined—and while the summons was being read, charging him with selling the photographs, he shook his head, as if he had managed to escape that charge, at any rate, and then he emphatically stated, "I am not guilty of selling the prints." He should, therefore, show the mode adopted by the defendant to evade, as he thought, the Act of Parliament. He was charged with selling or distributing photographs of certain pictures, and he (the learned counsel) held in his hand a great number of bills of parcels, or invoices as they might be called, made out by Mr. Plante. In none of them, however, would it be found that he appeared to sell what was termed a photograph, but what he called frames, and he (Mr. Motteram) supposed the defendant would say that he gave away the picture. Their Worships would see how very cleverly the gentleman employed by Mr. Graves for the purpose of detecting him—and he (the learned counsel) made no disguise of that fact—had circumvented the defendant, for there was an understanding that photographs should be called frames, as would be distinctly deposed to by Mr. McDouall. He had letters in the defendant's handwriting, in which he admitted almost the same thing. In a letter as early as May 4, 1869, when they were talking about pictures, and not the sale of frames and photographs, the defendant said, "You shall hear from me."

The defendant here interrupted the learned counsel, by stating that his attorney was not present. He said he had engaged and paid Mr. Fitter, who was not present, but had sent his clerk.

Mr. Fitter's clerk said it was arranged that a certain course should be adopted by the defendant, so that it would not be necessary for Mr. Fitter to come there.

Mr. Motteram: It was perfectly understood that he was to plead guilty to these charges.

Defendant: Nothing of the kind; never!

Mr. Motteram: And then he comes here and says, "I will not plead guilty to selling the photographs. I gave the photographs and sold the frames."

Mr. Hebbert: Are you prepared to plead guilty to distributing these things?

Defendant: I cannot do otherwise; but I never sold the pictures. They begged them off me, and there are witnesses to prove it. Is this a court of justice?

Mr. Hebbert: Do you plead guilty to the charge of having distributed twenty-one photographs of the engravings mentioned in the summonses?

Defendant: I do, to distributing them.

Mr. Motteram then read a letter in which the defendant said :—"The pictures you name are the most popular and dangerous ones. I cannot possibly undertake to send them. It would be the same as selling them. I am quite willing to make you frames, and give you a few such as you ask for, but only in the presence of a third party. You may think this strange, but it is only protection. If you require them for the Oxford people you will have to come down, and I suppose you will come on here, so that you may as well come here first as last. I hope you will see this in the spirit in which it is written. It is as much for your protection as mine. Any others but copyright pictures I can let you have straightforward and at once, but it would be as selling them if I were to consign them to you. If you think well you can and ought to be able to come, seeing that you will be so near as Oxford. I can make it well worth your while to come now, as I have some very nice things cheaper. I should like to see you at Christmas time, if not before. Shall I make some non-copyrights and send them in the case, or shall I wait till you come?" All through the correspondence there was an arrangement that he was to call them frames, or what he liked; but the person to whom he wrote did not adopt the word. He hoped the Bench would inflict one-half the penalty, as they were authorised to do under the Act, and then the prosecutor must take his chance. They knew for a fact that the defendant had that morning been in consultation with five or six others who were doing the same thing, and they did not believe he was as guilty as other persons. Whatever penalty the Bench might impose, it should not be enforced if the defendant would honestly give up the names, and enable the prosecutor to convict those who were more guilty than himself, and who were doing such serious damage to Mr. Graves.

Defendant said he would first of all make Mr. Fitter a present of the two guineas he had paid him, and would now defend himself. Twelve months ago that man (the informer) came to his house, introduced himself to him, dined and supped with him, nursed and kissed his children, and went to places of amusement with him. Twenty witnesses would prove that. When he went away he said he was in the rifle corps, and should like a few of some little subjects to give his "chums." He (defendant) was warmly attached to the man, as he acted so nicely, and felt as a brother towards him. He told him he dare not sell what were copyright, but would give him some.

The man then said he might as well take some frames, as he might make a shilling or two by them: and all the dealings he (defendant) had had with him had been of the same character. Would it be fair to send him to prison for not paying a fine? Offers had been made to him, and he had made an offer of £10, but he should have to dishonour a trade engagement in order to do it. He had no friends who would find the money to pay the fine, because every one could see that it was a dastardly, dirty piece of business. He pleaded guilty to distributing the photographs, but declared that he never sold one of them, every picture having been begged. He threw himself on the mercy of the Court, and admitted that he had acted foolishly, but in ignorance and unintentionally.

Mr. Mottoram: I have a letter in which he says he has consulted a solicitor, and bought the Act.

Defendant: What has that to do with it? I will assist them to find the man I bought the pictures from, and Mr. Graves knows the man. Defendant said there were three men in Court who saw the man take a plate into his shop, and a person giving the name of Davies remarked that the man was walking about the streets now. He added: In trading in these things a man must have a motive, and what motive had I? I am accused of trading in these pictures, but have I realised one shilling on the whole lot? I can prove to the entire satisfaction of any English gentleman that there has not been one farthing charged for these pictures. There are four or five gentlemen in the trade who will give a clear statement of the correct price and value of the frames, and if 6d. more than the trade price has been charged for any one of them, then send me to prison, and I will go with pleasure.

Mr. Hebbert: What brings you in possession of all these things?

Defendant: I did not wish to tell you that until you asked me. I should be very sorry to injure Mr. Graves, but this man who runs about the town with those pictures—and I believe he was an agent sent to me—sold me five dozen at 4s. It is proved that they are wasters, and the last time he came to me I said I would have nothing to do with him.

Mr. Kynnersley: Every act of distribution is an act of robbery to Mr. Graves. I should not be doing my duty if I did not inflict a substantial penalty in each case. You must pay a fine of £5 for each photograph.

Mr. Kynnersley, upon the application of the learned counsel, ordered the defendant to be imprisoned for two months for the first case, and fourteen days for each of the remaining cases, in default of the fine being paid.

Defendant said he had only £11. He returned his best thanks to all his friends, who, he knew, had done the best they could for him; but he asked them not to pay the money.

The defendant was then removed in custody, and outside the Court a distressing scene occurred with his wife.

PIRACY OF PHOTOGRAPHS.

On Tuesday, at the Mansion House, John Conroy, a respectably dressed man, of forty, who had been apprehended on a warrant, was charged before Alderman Sir Thomas Gabriel with infringing various provisions of the Act 25th and 26th Victoria, cap 68, for amending the law relating to copyright in works of the fine arts, and for repressing the commission of fraud in the production and sale of such works. Mr. George Lewis, jun., solicitor, who conducted the prosecution, explained that the Act in question vested in the author of certain original works of art, including photographs with their negatives, and his assigns, the sale and exclusive right of copying, engraving, reproducing, and multiplying them during the life of the author and seven years after his death. Another section made it an offence punishable with a fine of £10 for any person, without the consent of the proprietor, to copy, colourably imitate, or otherwise multiply for sale, hire, exhibition, or distribution any such work of art, and the forfeiture of all such copies and imitations. The prisoner was defended by Mr. Beard, solicitor.

Mr. George Swan Nottage, the complainant, was called as a witness. Replying to Mr. Lewis, he said he and Mr. Kennard were partners in the London Stereoscopic Company, 54, Cheapside, and had also a place of business in Regent Street. He was personally acquainted with Mrs. Rousby, the well-known actress at the Queen's Theatre. The photograph produced was one taken by the Stereoscopic Company of her in the character of the Lady Elizabeth, which she played in "'Twixt Axe and Crown." He caused it to be registered, in compliance with the Act, at Stationers' Hall, on the 21st of March last, describing it as a photograph of her, "seated, with white lace veil overhead, the hands together holding flower and handkerchief, three-quarter length." He produced the certificate of registration. His partner and he were the authors and owners of the photograph, and they never authorized the prisoner or any other person to copy it. The imitation produced, taken from the prisoner, was a pirated copy of it. It was hardly so fresh as the original. To make a copy as good as the original would be an invaluable art. There was a softness and a tone in the original which were wanting in the pirated copy. There had been an enormous sale of the original—larger, indeed, than that of any other celebrity of whom they had taken a photograph. It was a valuable copyright, and Mrs. Rousby had sat exclusively to them for the photograph. His firm also took a photograph of Mr. Longfellow, the American poet, who sat to them for the purpose on the day he visited the Queen at Windsor. Witness caused it to be registered on July 9th, 1868, describing it thus:—"Photograph of Henry Wadsworth Longfellow, large head and bust, looking straight forward." Witness was owner of the photograph and of the copyright. He had not authorized the prisoner or anyone else to copy it. The imitation produced, found in the possession of the prisoner, was unquestionably a copy taken from that of witness's firm, except that it was dead, flat, and mealy, compared with the original. No matter how clever a photographer was, he could not produce a copy from a photograph equal to one taken from a negative. That of Longfellow had sold very well. He was very popular indeed in this country.

Being cross-examined by Mr. Beard, witness said he did not know the prisoner. There might be instances in which their photographs were marked "copyright," though not registered. They considered they had a copyright in any one of their photographs, though it might not be registered at Stationers' Hall. In the case of their photograph of Lord Byron they had permission to take it from the engraving. They had published one of the Prince of Wales, and had a copyright in it. They registered it as a photograph, and put it forth as their copyright.

By Mr. Lewis: They claimed a copyright in every photograph they had taken, although they had not registered them all, and they had never had an application under the Act of Parliament to expunge their right of ownership.

Geroge Russell, a city detective sergeant, said he knew the prisoner as a hawker of photographs. On the 28th of April he met him in Little Tower Street, and bought of him a portrait of Mrs. Rousby and one of Longfellow, paying sixpence for the two. The prisoner was then carrying a box in which there were about two hundred photographs of various persons. He gave an address, and on witness going there he found he had left three weeks previously. On Monday last witness arrested him on a warrant, and found on him one hundred and sixty-four photographs and fourteen pictures.

At this point, on the request of the solicitor for the prosecution, Sir Thomas Gabriel remanded the prisoner for a week, and consented to admit him to bail in the meantime, himself in £50, and two sureties in £25 each.—*Times.*

Correspondence.

ALLEGED PIRACIES.

Sir,—Having noticed in your impression of the 13th instant, a statement that "Detective Serjeant Russell, of the City Police, accompanied by two officials of the Stereoscopic Company, Cheapside, visited the premises of a travelling dealer in photographs, of the name of Day, at No. 4, Mount Pleasant, East Road, N., and removed therefrom a large number of photographs, being piratical copies of copyright photographs, the property of the Stereoscopic Company," we beg to say that we have received instructions to commence proceedings against Serjeant Russell, and Mr. Nottage, of the Stereoscopic Company, for trespass, in entering the premises of Mr. Day, and removing therefrom such so-called piratical copies of alleged copyright photographs.—We are sir, your obedient servants,

Chipperfield, Sturt, and Palmer.

7, *Trinity Street, Southwark, London, S.E., May* 21*st*, 1870.

Proceedings of Societies.

French Photographic Society.

A meeting of the Society was held on the 6th inst., M. Peligot in the chair.

The **President** called attention to the deplorable loss which photographers had sustained by the death of M. Niepce de St. Victor. He commented upon that photographer's brilliant inventions and patient investigations, and designated him as one who had contributed, to a very great degree, in making photography a practical art.

M. **Leon Vidal** presented a copy of his new work upon carbon printing, &c.

M. **Laulerie** intimated that the Photographic Exhibition had been opened, as announced, upon the first of May, and that the collection of pictures shown was fully equal to that of last year. A meeting would be held to elect a jury of awards to adjudge prizes to the most deserving exhibitors, but any of the latter appointed jurymen would have to give up their chance of receiving a medal.

M. **Guerry** described a method said to be used in many studios for removing stains of nitrate of silver and pyrogallic acid from the hands. The means is a very innocent, and, at the same time, efficacious one, and consists in the employment of a pure and concentrated solution of hypochlorite of potash, to which has been added, per litre, ten grammes of iodide of potassium. The action of this solution is more rapid than that of iodine or cyanide of potassium, any disagreeable smell being subsequently removed from the fingers by further immersion in a solution of hyposulphite of soda.

The **Marquis Maison** detailed some modifications he had made in obtaining enlargements by a development process. Salted arrowroot paper is used for the purpose, sensitized on a silver bath containing citric acid. The modifications consist in immersing the printed sheet two or three times in water previous to development; in developing the print in a pyrogallic bath, face downwards, instead of merely floating it upon the same; and finally toning the picture after developing and washing. The passing of the print into water prior to development has the effect of removing from the surface any excess of silver, and preventing the formation of stains. The whole process may be thus briefly described:—Float a sheet of salted paper, well sized with arrowroot, upon a bath of—

Water	1,000 cub. cents.
Bromide of zinc	5 grammes

Dry, and sensitize upon—

Water	1,000 cub. cents.
Nitrate of silver	100 grammes

to which a little citric acid is added for the purpose of preserving the whites. When sensitized, the paper is exposed, while still wet, to the action of the enlarging camera, and, when sufficiently impressed, passed two or three times through water, and developed in a bath of—

Water	1,000 cub. cents.
Pyrogallic acid	2 grammes
Glacial acetic acid	75 cub. cents.

The above liquid is constantly agitated during development of the print, the latter, after washing, being toned in—

No. 1.—	Water	500 cub. cents.
	Acetate of soda	5 grammes
	Phosphate of soda	5 "
No. 2.—	Water	500 cub. cents.
	Chloride of gold	½ gramme.

No. 2 is poured into No. 1, the liquids being agitated during the mixing.

Mr. **Woodbury** forwarded to M. Davanne the following note:—"I find, in the proceedings of the last meeting of the French Photographic Society, an account of a discussion having reference to the application of photographic reliefs to the production of water-marks in paper. Will you allow me to state that this is my invention, having taken out a patent for the same in France on the 18th May, 1867, the description of my process being published in the Photographic News of the same month. I worked at the process, during the time of the exhibition, in M. Bingham's studio, and M. Marion was good enough to allow me the use of his rolling-press. I have now ceased to pay the claims for my invention in France, and my patent has therefore lapsed in that country. You will greatly oblige me by bringing these circumstances under the notice of the Society, and exhibiting to the members thereof the specimens enclosed."

M. **Davanne** explained that the priority of invention was certainly due to Mr. Woodbury, although the *modus operandi* pursued was scarcely the same in both cases. The specimens produced by himself and colleagues were secured by means of breaking up the fibre, so to speak, and thus obtaining contrast; while Mr. Woodbury's prints were the result of pressing down a mould of a very delicate description.

M. **Davanne** likewise communicated the contents of a letter from Mr. Blair, forwarding some specimens of his carbon tissue produced upon a textile fabric; its method of employment and various qualities were described.

M. **Jeanrenaud** explained a method of obtaining a matt albuminized surface adapted to the transfer of carbon prints by coagulation of the albumen. The paper is, in the first instance, very strongly sized, and, in a damp condition, floated upon—

Albumen	100 cub. cents.
Pure liquid ammonia	20 "

The ammonia has the effect of dulling the brilliancy of the albumen, and rendering it capable of being preserved for any length of time.

M. **Gobert** gave a demonstration of the method of transfer adopted by him in the carbon process.

The proceedings then terminated.

Talk in the Studio.

Women's Rights.—In Germany some of the ladies are claiming their rights without holding public meetings, or troubling parliament, or, in short, in any way joining what the *Saturday Review* rudely terms the "shrieking sisterhood." Amongst the members of the Berlin Photographic Society are the names of two ladies, professional photographers: Miss Paul, Photographic Atelier, Stella, and Mrs. Ida Rath, Photographic Institute, Kissengen. Alexander Dumas, *père*, says that in Vienna nearly all the photographic portraitists are women, and gives a rapturous account of the charming Madame Wilhelmina Stockman, to whom he "posed three, four, five times—as many as my pretty photographess wished." In the large photographic printing establishments in Germany the labour is chiefly performed by girls.

Attaching Masks to Negatives.—Referring to the question of Mr. Seeley's letter in our last, Mr. B. J. Edwards mentions that he has never found that masks attached to negatives by means of india-rubber cement tear off the collodion film. Gum, or paste, or any hygroscopic cement, produces this disaster, by expanding and contracting in a moist or dry atmosphere; but india-rubber, not being affected by moisture, has no such tendency. A mere touch of the cement here and there is sufficient to hold the mask in its place.

Photographs of the Œcumenical Council.—Photography, at one time tabooed by the Pope, has produced an interesting *souvenir* of the great council of the church. We learn from the correspondence in a contemporary that "in the establishment of the great Roman photographer Alessandro there is an exhibition of the photographs of about five hundred of the prelates attending the council, with the names and dioceses underneath. The heads of the more illustrious of the fathers are many of them striking. Dupanloup is dignified, intellectual, and decisive in appearance. Haynald has a charming, smiling face. Strossmayer looks keen and vivacious, and his hair rises high above his head, bending back behind his ears like two black horns; he is fifty-five, and looks as fresh as a young Hungarian Hussar. Manning is wonderful; one would think it was St. Bruno, the founder of the Carthusians, come back to earth again, perfectly bald, attenuated to knife-like sharpness in the projecting features, almost ghastly; it is feared that his health is seriously broken."

Negatives for Enlargement.—In preparing negatives for enlargement, do not under-time the picture, but expose fully, and rather under-develop. The details in the shadows will then be rendered more effective, with less liability to fog by attempting to force detail out of an under-exposed picture. The chemicals must be in fine working order, perfectly free from fog, and calculated to give a good, forcible negative, not so dense, however, as is required for contact printing. Difference of opinion exists as to the advisability of using hypo or cyanide for fixing. some contending that cyanide is too strong in its action, cutting away the weaker parts of the picture, while others claim that hypo is not active enough. My preference is for cyanide of medium strength; but if hypo is used, the quality of first importance in the negative must be sharpness. If, in a portrait, the face, hair, or whiskers are not perfectly defined, it is useless to expect that a print enlarged to life-size will be satisfactory.—*J. C. Brown in Philadelphia Photographer.*

Bromide of Potassium.—Dr. Namias, of Venice, has discovered that after the adminstration of bromide of potassium as a medicine, it can be detected in the brain, the lungs, and the liver, as well as in the blood.

Suicide of a Photographer.—A few days ago it was discovered that Mr. Firth, photographer, of Dudley Grove, Paddington, had committed suicide by taking poison. He leaves a wife and six children. with one child lying dead.

Preparation of Bromide of Sodium on the Large Scale.—M. Castelhaz, a manufacturing chemist, states, in *Comptes Rendus*, that the best plan is to prepare, first, bromide of ammonium, by causing bromine to fall drop by drop into dilute but pure liquid ammonia contained in a series of Wolff's bottles, in order thus to prevent the loss otherwise inevitably resulting from the volatilisation of the products formed by the great heat disengaged on the bromine and ammonia uniting. The liquids, after saturation, are evaporated in a cast-iron retort to which an earthenware receiver is fastened, wherein are collected the vapours of water, any excess of ammonia, and some bromide of ammonium, which is accidentally carried over. The bromide of ammonium thus obtained is converted into bromide of sodium, by being mixed with pure carbonate of soda, and the application of sufficient heat to volatilise and sublime the carbonate of ammonia formed by the reaction. This mode of preparation yields, after re-solution of the bromide in water, and evaporation similar to that used for chloride of sodium, perfectly pure and anhydrous bromide of sodium.

On Photography to Phœbus.

Phœbus Apollo, King of Light benignant,
In glory seated 'mid the solar blaze,
Lord of the Fine Arts, dost thou not, indignant,
Behold how mortal men profane thy rays?
O Phœbus, 'tis enough to drive thee furious
That we sun-pictures make of scoundrel thieves,
Whilst thine half-brother, eloquent Mercurius,
Nephew of Atlas, their Protector, grieves.
Thais, and Lais, and Phryne, and such creatures,
Bright Hyperion, thou must needs portray.
On view, for sale, lo, their audacious features
Beside the holiest Icons, god of day!
Vile notorieties, snobs, scenes of folly,
Displayed to gaping multitudes we see,
Dead brigands; objects yet more melancholy,
Live blackguards in shop windows drawn by thee!

Punch.

To Correspondents.

George Beak.—A warm tone in transparencies may be obtained by using a moderately new bath in good condition, giving sufficient exposure, and developing with pyrogallic acid and acetic acid. If the plate be under-exposed and long developed, a black tone will be produced; if fully exposed and rapidly developed, a warm tone will be obtained; or a warm tone can be obtained on almost any transparency by means of a mixture of ferridcyanide of potassium and nitrate, or persulphate, of uranium. For details of formulæ see our last and previous Year-Books. Intensifying with permanganate of potash will give a very warm, brown tone.

J. R. P.—Where the water supply is limited and cannot be had as a continuous flow for some hours, very perfect washing may be secured by constant change, and draining the prints between each. After removing from the hypo, wash the prints thoroughly for five minutes in half a dozen successive changes of water. Then give them eight or ten changes at intervals of (say) ten minutes, taking care to drain each print each time. It is a good plan to take the prints one by one from the dish, drain well, and place in a dish of clean water; leave the whole, when the change is completed, for ten minutes; and then repeat the operation. Six such changes, after well washing for the first five minutes, will give the prints a very good washing indeed.

Oxoniensis.—We at one time had a pair of stereo lenses one of which was more rapid than the other. We found it not difficult to equalize the time of working by employing one of them with a stop somewhat smaller than the other. This involves a little trouble, but not much.

Hypo.—The simplest and best plan of recovering the silver from hyposulphite fixing solutions is to add a little liver of sulphur to the solution, which will precipitate the silver as a black sulphide, which will contain about half of its weight of pure silver. You may then either reduce it in the crucible yourself, with the aid of a flux, or send it to the refiners. 2. Certainly the quantity is worth saving, as the trouble is small when once the habit is acquired. It is only necessary to set aside a barrel or large jar into which at all times to throw the exhausted fixing solution, which involves very little labour or care. The finished print does not contain ten per cent. of the silver employed in producing it, hence it is as well to try to recover a portion, at least, of the remaining ninety per cent.

M. A. Walker.—There is no recent book on the chemistry of photography. As a manual of manipulations, you will find Mr. Hughes's book useful. For information on the principles and chemistry of photography, and information on its more advanced branches, you will find the volumes of the Photographic News and the Year-Books of Photography for the last few years the most comprehensive works you can study.

Von Dix.—We regret that our advertising pages appear in this case to have been used by a dishonest person. Unfortunately, we can have no safeguard against such an occurrence; and it unfortunately happens that the law of libel does not permit us to make any announcement such as that you propose. We will endeavour to get some information regarding the delinquent.

X. Y. Z.—The question of texture in a photograph, in the sense to which you refer, depends upon a variety of things; a little upon the lens, but more on the lighting, exposure, and development, and very much on printing. The difference between the texture of the two scraps enclosed is due chiefly to exposure. That with the best texture has been best lighted and had the fullest exposure. So far as the lens affects the question, one with sufficiently long focus for the work, and having a little diffusion of focus, will best give the kind of texture you admire. Perfect illumination of the subject and sufficient exposure are imperative. The use of a collodion, developer, and other conditions which will give sufficient force in the negative, without much piling up with the intensifier, is important. The use of a somewhat weak toning bath, not too new, is also necessary to the result. 2. A mixture of carbonate of soda and carbonate of potash is commonly used as the flux, but the sulphide should be roasted well before mixing it with the flux.

Subscriber.—It is not worth while reviving the subject. As we have before intimated, the statement that "Mr. Williams stood alone in the committee in his desire," &c., or on any point as to the management of the whole business, is simply false—a sheer fabrication. The committee were at one throughout, acting chiefly on the suggestion of Mr. Williams, who was best acquainted with the facts of the case. He was custodian of the money for a great part of the time the matter was in hand, and acted as almoner.

A. Z.—You will find full details, with illustrations, of a good manipulating box in our Seventh Volume, page 458. It is that used by Mr. Blanchard in his instantaneous stereoscopic work, and is also large enough for cabinets. See an article on the subject in the present number.

Pyro.—It is somewhat difficult to produce developed collodion prints with the rich, warm brown easily obtained with collodio-chloride of silver. The best mode of obtaining something of the kind is by toning with Selle's intensifier of ferridcyanide of potassium, and nitrate, or persulphate, of uranium, or with the modification of it given in our last Year-Book.

G. Bruce.—Thanks. We had noticed that in some of the pieces we tried the film was very loose. We intend shortly to try thoroughly, and report fully.

J. Inglis.—Received. Thanks.

Received.—"Photographie au Charbon, par Leon Vidal. Deuxieme partie." Notes on Indian Photographs, by Capt. Lyon.

Several Correspondents in our next.

Photographs Registered.

Messrs. Barford and Newitt, Wolverhampton,
Two Photographs of St. Peter's Church, Wolverhampton.
Mr. H. Penn, Birmingham,
Two Photographs of J. Mason, Esq.
Messrs. Downey, Newcastle,
Two Photographs of Madame Schnieder.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 613.—*June* 3, 1870.

CONTENTS.

PAGE
Matt Transparent Pictures.—Removing Collodion from Images Transferred to Paper, Ivory, Wood, etc. 253
Photography for Wood Engraving 254
French Photographic Exhibition 255
Photographs with the Gift of Healing 255
American Correspondence 256
German Correspondence 257
On the Preparation, Printing, and Transfer of Carbon Tissue. By M. Gobert 258
Manipulations in Johnson's Carbon Process 259

PAGE
Collodio-Bromide Process. By M. Carey Lea 260
Weighing and Measuring. By M. Carey Lea 261
Extensive Photographic Piracy 261
Correspondence.—Cleaning Plates—Dr. Diamond "*Re* Paul Pretsch"—Red Deposit on Using Golden Syrup 262
Proceedings of Societies.—New York Photographic Society—Amateur Photographic Association 263
Talk in the Studio 264
To Correspondents 264

MATT TRANSFERRED PICTURES.—REMOVING COLLODION FROM IMAGES TRANSFERRED TO PAPER, IVORY, WOOD, ETC.

THE use of transferred collodion images has of late become very general for many purposes, and the use of collodion as a means of transporting images in various processes is well known to experimentalists. For producing prints on ivory, collodion presents the readiest facilities. There is no method of enlargement more easily worked, or which gives better results, than camera printing in wet collodion. Collodion is indispensable in enamel processes; there is no better method of producing a photographic image on wood than it presents; and for placing images on the curved or irregular surfaces possessed by vases and other ornaments it possesses advantages which, as yet, few photographers have realized. But in many of the cases to which we have referred it is necessary, in order to secure the best result, that the collodion should be removed when the transfer is completed; and this removal has often presented difficulties, the dried collodion film, especially in contact with gelatine and similar bodies, resisting the action of the ordinary solvents with singular persistency.

In some cases where transferred images are employed it is imperative that the collodion should be removed in order plete the operations; and in many others where it bsolutely necessary—as, for instance, in transferred n enlargements—an enormous improvement may cted by its removal, leaving a fine matt image, in closely resembling a mezzotint engraving. There le field, hitherto unworked, for the production of s of this kind in various tones, from rich brown to r neutral black, to methods of producing which we ortly call attention. In the meantime, as we des- another column the use of collodion for placing raphic designs on wood for the engraver, we give a e place to a necessary part of the process—the re- of the film—because the operation in question is of importance in relation to many processes which all shortly bring under the attention of our

e are two difficulties in removing the collodion film nages produced on collodion, the extent and exact of which can scarcely be understood by photo- rs who have not had experience in this direction. se who have occasionally dissolved a collodion film, t a good negative by the use of a varnish made with r spirit than usual, allusions to the difficulty of dissolving dried collodion films must sound oddly enough. Nevertheless, the difficulty exists. The negative film which is dissolved by varnish is always in a slightly imperfect condition: the collodion used has not been of tough character, which should always be chosen for transfer purposes, but, besides this, the photographer who has met with this over-facility in films dissolving, remembers that the image dissolved also. It is true that the image is resting on the film, and, when the film dissolved, it was, of necessity, broken up into innumerable particles, floating away with the dissolved collodion. But it would, in the majority of cases, have been the same if the film had been uppermost, and the image resting on the glass. When the collodion has become quite desiccated, the metallic image is so firmly attached to it that it breaks up when the film dissolves; and as, in removing the film from a transferred image, it is desired that the picture shall remain intact on whatever surface it may rest, whilst the glazed film only is removed, a solution of the film with such conditions is worse than useless.

As an illustration of the insolubility of the dried film, we have just attempted to dissolve the collodion from an eburneum picture, which, as the reader knows, consists of a collodion image on a support of gelatine and oxide of zinc, the metallic picture being between the two films, and, of course, as much in contact with the gelatine as the collodion. We poured over the collodion surface ether and alcohol, repeatedly flooding it for about five minutes before any appearance of solution was manifest; at length the film began to break up, and the image with it, leaving not a vestige of the picture attached to the gelatine. The method we are about to describe, and which is due to Herr Grune, would have dissolved the collodion, and left the image intact as a black metallic powder attached to the gelatine surface.

To remove the film without injuring the image proceed as follows:—

First, take care that the film has been attached to its new support with collodion side uppermost, the side on which the deposit was produced by development and toning in contact with the surface upon which it is to remain. The mode of transferring to wood is described in another column, and we shall refer to the methods of transferring to paper or other surfaces in future articles. When the transferred collodion film is surface dry, but not desiccated, alcohol—methylated spirit will answer perfectly—is poured over it once or twice. This will absorb all the water, leaving the film saturated with the spirit, and on the application of a mixture of ether and methylated spirit the film will readily dissolve, and may be rinsed off without disturbing the image. It will be seen that the collodion film treated in this way remains, after the water has been absorbed by the spirit, in a spongy permeable condition, in which it is easily acted upon by solvents. The metallic image, whether of silver, gold, platinum, uranium, manganese, or other metal, modes of depositing which we shall describe fully hereafter, having been on the film in the form of metallic powder, remains on the new surface to which it has been attached, uninjured by the solution of the collodion film which then covers it.

PHOTOGRAPHY FOR WOOD ENGRAVING.

The value of a process which should place a photographic design on a wood-block, so as to supersede in some instances, and largely aid in all cases, the work of the draughtsman, has been recognized ever since the advent of photography as an art. Many methods have been proposed, some have been practised, but there have been drawbacks in connection with all sufficiently serious to limit, if not to destroy, their practical value to the wood-engraver, and none, until recently, have come into general use.

The difficulties have been [illegible] e, if the photographic image has [illegible] od block itself, the action of th[illegible] ces sity tended to injure the tex[illegible]; and in the next place, the [illegible], of collodion, albumen, or gelat[illegible] st of the processes already tri[illegible] r to the convenient and successfu[illegible] he films have chipped or torn a[illegible] ng, so that the risks and inconv[illegible] anced the advantages of most of t[illegible] d. It was necessary, in order to s[illegible] be produced on the surface of [illegible] p[illegible] ea- tion of any solution whic[illegible] or texture, and that no film o[illegible] be present which would either [illegible] erfere with the free use of the gra[illegible] eiving its photographic design, should [illegible] indeed, as nearly as possible, in the same condition as [illegible] it leaves the hands of the draughtsman.

We have before us several examples of wood engraving, in the *Graphic* and the *Illustrated Times*,* in which photography has been successfully employed to transfer the design to the block, with all the conditions necessary to the convenient work of the engraver. The process has been designed by Herr Grune, to whom we are indebted for particulars of the mode of working employed. The method is simple, and requires only the neatness and skill in manipulation which may be easily acquired after a little practice by any good operator. The first step in the operation is the production, from a negative of the required design, of a good transparent positive by the ordinary wet process and camera printing. In producing the transparent positive a collodion of good tough body, not over-iodized, is desirable. An ordinary commercial bromo-iodized collodion, to which from four to eight grains per ounce of soluble cotton have been super-added, will generally answer well. After fixing and soaking in water for half an hour—a few hours will not injure it—the film is removed from the glass. To effect this conveniently the plate is immersed for a few minutes in a dilute solution of sulphuric acid (about one drachm of the acid in three ounces of water will serve). On removing it from the acid solution and rinsing it under a tap, the film will float loose on the glass, from which it is slipped into another dish of clean water to rinse. The next operation is toning, or converting the image of silver into another metal, which is much more easily effected with the film thus separated, than it would be whilst it was attached to the glass. For the purpose of the wood-engraver it is not important how the picture is toned; all that is necessary is to secure an image of good colour, not too deep or dense. Gold toning will answer very well, but the solution must be more dilute than for toning albuminized prints. A ten-grain solution of permanganate of potash will answer well, giving a brown image. The mixed solutions of ferrid-cyanide of potash and nitrate, or persulphate of uranium, known as Selle's intensifier, will answer well, giving a chocolate coloured image. The toned image is then lifted into another dish of clean water to rinse.

We may here remark that the floating films are not very difficult to move about and manipulate. A common camel's-hair pencil about the thickness of a goose quill is used for lifting them. A deep dish of water makes the operation more convenient. The pencil is placed under one edge of the floating film, so that the latter rests on the shank of the brush, by a slight turn of which the film is caught and easily lifted up. On placing it in the next dish, a slight reverse turn releases the film, and it floats loose again in the solution. Any doubling over of the film is easily straightened out by the aid of the soft end of the pencil.

The next operation is to place the loose film on the wood block, which must first, however, be prepared to receive it. This preparation consists in applying to the smooth surface of the wood a thin solution of gelatine and zinc white; the smallest possible proportion of gelatine sufficient to form size vehicle for the zinc white, but insufficient to give a perceptible layer, or one which would in any degree interfere with the process of cutting, is all that is required. This, after application, is left to dry, and the block is then in the condition in which it would ordinarily be placed in the hands of the draughtsman.

To place the film upon this prepared surface, proceed as follows:—Take a plate of perfectly cleaned glass, and place it under the floating film, and lift it steadily out of the water. The camel's-hair pencil will aid in adjusting the film flat on the glass, and the operation will not be found difficult after a little practice. A point of importance here is to see that the collodion side of the image is uppermost, the side having the reduced deposit being in contact with the glass. A piece of thin semi-transparent paper is now made wet and laid upon the film, leaving about a quarter of an inch of the latter to turn over the paper. This done, it is easy to lift up the paper and film together.

The film is then laid upon the prepared wood block, the metallic side being in contact, and the collodion side uppermost, and the paper which has been used for the purpose of aiding in lifting it is removed. The paper being thin and transparent, as we have said, permits the image to be laid in the desired position upon the wood block. By a little skill in manipulation, aided by the camel's-hair pencil, the film is easily adjusted, and after the bulk of water has drained and evaporated, air-bubbles, if any remain, may be gently pressed out to the edge of the film by the soft point of the pencil. A piece of blotting-paper laid upon the film, and gently pressed down, assists in removing excess of water, and in pressing down the film. When the latter is surface dry, but not desiccated, methylated spirit is poured over it to remove all the water from the film, which is then treated with ether and alcohol to dissolve the collodion, as described in another column, and an image, black or brown, depending on the treatment, consisting of a fine metallic powder, is left in contact, and firmly attached to the wood block.

This image is, if from a negative from nature, however, formed of the continuous gradation of flat tints which characterize photographs, and not in the mechanical gradation of hatching or stippling necessary in ordinary mechanical printing operations. Some engravers are accustomed, in cutting, to translate flat tints into line, and find no difficulty in producing a printing-block from a drawing in tints; but, as a rule, the draughtsman on wood is in the habit of producing the image in the lines to be followed in cutting. It will often be found desirable, therefore, to place the block, with the photographed image on its surface, in the hands of the draughtsman accustomed to such work, who will, without much labour, indicate, by a few lines from his pencil, the kind of treatment in cutting by which the effect intended is to be produced. We have before us, in one of the periodicals mentioned, a series of portraits in which the head is an inch or two in length. These were produced by enlarging the heads in a card group to the desired size; the likeness, with its true drawing, having been thus secured on the wood, the draughtsman and wood-engraver had comparatively little trouble in producing printing blocks with suitable gradation.

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* The Illustrated London News is also, we understand, adopting the same method.

The method of transferring so as to secure an image in metallic pigment without any extraneous film here indicated may, as the experimentalist will easily understand, be applied to other surfaces of wood, ivory, &c., for purposes of ornamentation. The examples to which we have referred are the work, we believe, of Mr. Loudan, a skilful wood-engraver connected with the journals in question, whose instruction in the method was derived from Herr Grune.

FRENCH PHOTOGRAPHIC EXHIBITION.

The exhibition of the French Photographic Society was opened, as contemplated, upon the 1st May, and will remain open up to the 31st August. The pictures have been arranged in the south-east portion of the Palais de l'Industrie, in the Champs Elysees, the rooms being in connection with the exhibition of paintings and sculpture, held annually in the same building.

The *Moniteur de la Photographie* pronounces the show to be the finest that has yet been seen, including specimens of almost every branch and application of photography. The more novel improvements in photo-engraving, carbon printing, and enamel photography, are well represented, occupying, indeed, the greater amount of space of the exhibition, and demonstrating clearly that such processes are now extensively employed in practice.

The gallery is divided into two halls, of which the one contains French and the other foreign productions. Besides these, there is a darkened vestibule for the exhibition of transparencies, and a room for lectures and demonstrations.

The prizes have not yet been adjudged, but a meeting was called on the 24th ult., at the rooms of the Society in Paris, at which the names of jurors were chosen. The classification and examination of the various productions will be at once commenced, and the names of the medallists forthwith declared. Any exhibitors chosen as jurors will forfeit their right to receive medals.

Although the exhibition is advertised to close upon the 31st August, it is very probable that it will remain open another month; exhibitors should remember, however, that all pictures must be fetched away within a week of the exhibition coming to an end, otherwise the officers of the Society cannot be responsible for thier safe keeping.

We trust very shortly to be able to give our readers some further information on the subject of this exhibition, and to place before them a trustworthy account of the various specimens of photographic art there collected together.

PHOTOGRAPHS WITH THE GIFT OF HEALING.

Photography has many sins of its own to answer for; but, in addition to these, it shares the fate of all new sciences in being seized on by the charlatan and trader in the superstitions of mankind as a fit engine to impose on the weak and ignorant. The astounding demands on public credulity of Mumler and his associates, in asking a belief in the so-called spirit photographs, were startling enough, but in the statements of an apostle of a new evangel we are called upon to enlarge our faith in the marvellous.

Some of our readers have probably heard of the strange ministrations of one Dr. Newton, who is at the present moment exciting considerable attention in London by undertaking to heal the sick, the halt, the blind, and the deaf, by the laying on of hands. Thousands of these classes are said to be flocking to Cambridge Hall, Newman Street, Oxford Street, pressing, with eager faith, to come within the touch of the restorer. It is necessary to state the claims of this new ministrant to suffering humanity before we can make clear the wondrous part photography plays therein; we will therefore quote briefly from the statements of an eye-witness, who narrates the details of a visit in the *Pall Mall Gazette* a few days ago. He says:—

"Let me tell what I saw. It was a sorry sight On the small stage or platform were about a dozen well-dressed men and women, whom I took to be the immediate friends or followers of the doctor. The galleries were thronged with an eager crowd, not of the aristocracy. In the body of the hall were some hundreds of ill-dressed men, women, and children, a large part of whom seemed to have come for help. In the midst of this crowd was the doctor, with shirt thrown back, his neck bare, and streaming with perspiration. He was vivid with excitement, and aglow with a fury which he says is divine. I gazed intent and amazed. One after another the melancholy company pressed towards him eagerly. He seized them rudely, handled their eyes, or their ears, or their throats, and shook his stout arms at them, and said, 'Be healed! pass along!' He seized the legs of the decrepit, made them bend, and stoop, and stamp; took their crutches and threw them aside, telling them to 'Walk!' He took a palsied woman in his arms, passed his hands over her head, along her body and arms, and placed her back in her chair. All this was done roughly, rudely, and absurdly.

"These performances continued for a quarter of an hour; then the doctor climbed upon the platform, demanded silence, and addressed the assembly. He told them how he had come thousands of miles to cure and bless them, and all for nothing, out of pure love. He praised the Queen very much indeed. He announced that he could cure the sick in a lump just as well as in any other way, if they would only believe in and love him; and accordingly he went through the performance of ejecting the divine fluid from his fists in order to cure all who had not as yet been cured."

Up to this point there is nothing inconsistent with the character of a fanatical enthusiast of a somewhat vulgar type: and the fact that the doctor announced his intention of remaining in England for twelve months, in order to continue dispensing health and restored powers to sick and maimed humanity, and that without money and without price, seemed to give an air of good faith to his assumed mission. But if the doctor does not wish to profit by his notoriety, somebody does. There are photographs to be sold—magnetized photographs!—photographs endowed with the power of healing, like their original! Let us again quote the eye-witness:—

"One point of the address I have omitted, and perhaps it is *the* point. He stated that Mr. ———, of ——— Street, had made photographs of him, which he, the healer, had magnetized, and that these magnetized photographs would cure disease as well he himself could, in the body. He mentioned that these photographs were to be had for one or two shillings each, and that he got no share of the profits. The name of the photographer, the street in which he lives, and his number in that street, were afterwards re-stated with considerable emphasis by another speaker, who advised the people to disperse quietly"

There is something splendidly practical in this. Photographs with the power of healing must be in universal demand; and who can doubt that they are dirt cheap at two shillings each? Nevertheless, there is a fine mine to be worked for somebody's advantage. Photographers who devote themselves to the production of card portraits of celebrities are very happy to issue as many thousands as possible at the rate of sixpence a copy, so that a nett profit of one shilling and sixpence may be secured on each portrait of the benevolent doctor issued. How extensive may be the demand for photographs possessing the gift of healing it is impossible to estimate; but we may, by a few progressive steps, arrive at some kind of rough guess. Of a single recent portrait of the Princess of Wales not less than twelve thousand have been issued during the last twelve months, notwithstanding that there are scores of others in existence which have had a steady sale during the last eight years. The portraits of the English Royal Family, and of the Princess of Wales taken just about the time of her marriage, circulated, we have understood, to the extent of two millions. Is it fair to suppose that the craving for health and the promptings of curiosity combined may form a motive as strong as loyalty in inducing the purchase of portraits? We cannot pretend to say; but if they should do so in this case, a modest profit of one hundred and fifty thousand pounds would be secured by some one. The doctor assures his audiences, however, that he receives no share of the profits; so it is clear that his motive must not be impugned.

It is also right to add—and we do so without any comment—that the writer in the *Pall Mall Gazette* states that in America—whence Dr. Newton has come—there are many people who declare that he has cured or helped them, and that there are as many who say he is an arrant quack. He adds:—"I happen to know personally two gentlemen—one a merchant and the other a lawyer—of a New England city, who assert distinctly that he did cure them: one of an affection of the eyes, the other of a loss of voice."

Of his achievements in London the same writer says:—

"After the speeches were delivered I went among the crowd, desiring to find those who had been healed, if there were any such. I found one man who said, 'My throat was very sore, now the pain is all gone.' Another had come in terribly crippled and doubled up; he had been healed, it seemed. He was walking about erect, and when I asked him if he felt no pains, he said, 'I can't say none exactly, but I can walk as you now see, and before I could hardly stand.' A woman had come all trembling with palsy; she now sat in her chair quietly, and said she was free of the trembling, as she had not been for months before. A man with bleared eyes said he could see much better than before—was sure of it. One or two other cases of this sort came before me. Whether they were sincere, or liars and confederates, I do not undertake to decide. Perhaps they were only self-deluded and mistaken."

AMERICAN CORRESPONDENCE.

IRON AND PYRO—PINHOLES—DESTRUCTIVE HAIL STORM IN PHILADELPHIA—DEFEAT OF ANOTHER PHOTOGRAPHIC PATENT IMPOSITION.

Iron and Pyro.—A great deal has been written and said about the use of pyrogallic acid in combination with the ordinary iron developer, and, like everything else that is good, it is condemned by about as many as praise it. For certain subjects I find it a great power. During the winter its value could hardly be estimated too greatly for ice and snow views, when short exposures were necessarily made. Now the season is at hand when we shall try to capture the saucy little cascades that abound in both England and America, I find pyro, with the ordinary developer, to be indispensable on many occasions. I can make quick exposures, and yet get all the detail and printing density that I want. I know those who deprecate the use of pyro will cry that nothing but flatness and harshness will result; but I may not be far wrong in saying that their judgment smacks of harshness, and perhaps their failure is owing to some degree of flatness on their part.

I will describe the manipulations essential to secure the best results, and, if followed, I believe pyro will have some new friends. Have prepared a twenty-grain (fresh) iron developer; pour off as much as you will probably use in an hour, and add to it, just before using, as much pyrogallic acid as will be equal to (say) from two to four grains for eight ounces of developer, and shake until dissolved. The time of exposure and subject must govern the quantity of pyro used. Here the judgment must be brought into play, and experience will soon teach the proper proportions. The solution should be of a bright pyro colour, and, of course, if the exposure be very short, add a little more of it to the developer than when the exposure is greater. There are two things to be borne in mind particularly, and on their observance success positively depends: 1, The pyro solution should be fresh, never used over an hour old; 2, It should be made and used in dense shade, or inside the tent, otherwise flatness will occur that cannot be overcome.

There are occasions when even this will fail to give all the density needed. For example, in a subject where there is no sky, and the negative is not sufficiently intense, add silver to the iron and pyro mixture, and re-develop, always in the dark or in the shade. Since I have found how to proceed with it, I find it as essential to carry a little pyro among the traps always, as it is to be provided with lenses of different focal length.

Pinholes.—Two or three causes of pinholes have come to my notice recently, which are worthy of mention, or, rather, of being brought to the mind again, for I suppose they have been often noticed, especially in hot weather: 1. When we handle a plate just previous to coating, we often hold it with finger and thumb, near the centre, in order to give it a final brush with the blender, to remove any dust that may be on its surface. The moisture from the thumb and finger, spreading over the plate near where it was held, is now unconsciously brushed over, the plate coated, dipped, exposed, developed, and—found full of pinholes, caused by the moisture thus brushed over it. 2. I have seen some breathe upon a plate just previous to coating, but oftener blow upon it. In the latter case, the moustache very often scatters moisture over the plate, when it is brushed over with the blender, and the result—pinholes. A good safeguard against such is to seize the plate by one corner, just previous to coating, and wave it up and down, or fan it in the air; then brush and coat as usual.

Another good plan is to form the habit of always holding the side of the plate on which the film is to be downwards while you dust it, while the collodion is setting, and while carrying it from the bath to the holder. Many pinholes are prevented in this way, not only those caused by dust, but by drops of dew or rain falling down from trees over where you may be working upon the plate.

Again, a few days ago I saw a stereo photographer who had been much troubled with pinholes, and, with all his detective powers, he could not find out the cause. He observed, however, that the trouble was most apt to occur when the wind blew, yet he could not tell why, nor did he find the cause until a few weeks ago. He procured him one of the new (to us) and excellent five by eight stereo boxes, made by "The American Optical Company," New York, on the plan given by Mr. G. W. Wilson, of Aberdeen. This he tried at once, and although the wind blew hard, yet no pinholes occurred with the new box. The old box, then, must have caused those pinholes. A plate should soon tell, and, sure enough, on exposure, proved that the box, being old and worn, admitted a great deal of fine dust to settle upon the plate, and hence the villainous pinholes.

These may all seem trifles to mention to the experienced, but the inexperienced must learn that attention to these trifles is necessary in order to secure the best results and partial immunity from trouble.

Destructive Hail-storm in Philadelphia.—Commencing at two p.m. on Sunday, May 8th, and lasting fully fifteen minutes, the most violent and destructive hail storm ever known in our city occurred. Besides much damage to hot-houses, dwellings, stores, &c., every photographer in the city had his glass house completely shattered to pieces. Not an unbroken glass remained in any of them, for they nearly all incline to the north, and the storm came from the north-west. I enclose you a stereo of the interior of Mr. Wm. Bell's glass room, made twenty minutes after the storm had ceased. You see not a glass is left in the sash; the curtains hang torn and dripping; boilers, and kettles, and pans are scattered all over to catch the drenching rain that followed—most damaging of all; a boy is shovelling up the great heaps of hail, and an assistant trying to bale up the water, to save everything in the rooms below from ruin.* The room is the picture of destruction, and is a type of the studios in this city generally on that occasion. It was a terrible affair to all, and it will be some time before the damage can be repaired.

Some of the hailstones measured six and seven inches in circumference. Several of them were photographed. Four of them weighed together 1870 grains, a curious number considering the year. As a result of this, several old skylights are being re-modelled as they are repaired, so perhaps photography may gain after all by that allopathic hailing.

Defeat of Another Photographic Patent Imposition.—You will no doubt rejoice with American photographers that they are freed from another patent imposition that threatened to be as damaging to the interests of photography as did the famous Bromide Patent, which was defeated about two years ago. Jehyleman Shaw, an ingenious specimen of the genus Yankee peculiar to the Nutmeg State, patented a "vessel" to be used by photographers for precipitating the silver in from their waste solutions. It consisted merely of a square or round vessel with a partition down the middle, from the top to near the bottom. The waste solutions were thrown in at one side of the partition, where was suspended suitable precipitating ingredients, forced, by hydrostatic pressure, up the other side, and out at an opening near the top of the same, the silver precipitating in the process of passing through the vessel. To this much the patentee was welcome; but, not satisfied with that, he claimed more; and so *much* more did he claim that even that which he had was taken away from him. He claimed—1. That *he* was the *first* to discover that the precious metals could be precipitated from photographic wastes. Chemists and others may have recovered silver from solutions before, but he stated, "photography gave birth to certain new compounds—such as iodide, bromide, and hyposulphite of silver, &c.—and he was the first to make known the fact that the precious metals could be saved from them." 2. The above being the case, and finding no suitable vessel for precipitating properly, he invented his vessel as described, and thereupon claimed that all who saved their wastes infringed his patent, no matter what the means. This will seem supremely ridiculous to you, and so it did to all upon whom he tried to press his claims. He was accordingly obliged to prosecute some one to bring the matter before the courts in order to get a decision as to his claims. I am very happy to announce his entire defeat, and append you a copy of the opinion of Judge Blatchford in the matter. The photographers are congratulating themselves, as well they may, for his victory would have imposed a grevious annual tax upon them, hard to bear. Photography is now almost entirely rid of hampering patents in this country.

Our country is looking delightful now, and is in its fresh spring garments. The landscape photographers are as busy as they can be.—Truly yours, EDWARD L. WILSON.

Philadelphia, May, 1870.

GERMAN CORRESPONDENCE.

On board the steamer Holsatia, from Hamburgh to New York, May 11th, 1870.

Albert Process — Chromo-Photo-Lithography — Kurtz' Backgrounds — New Photographic Telescope — Camuzet's Researches on Collodion — Action of Aperture of Lenses.

I AM now on my way to the United States, for some weeks, in acceptance of a very kind invitation of the American photographers to attend the Cleveland Exposition; and I hope to observe in America many interesting things in photography, from which I shall report in future to your readers. In the meantime we have had very important proceedings in the Society for the Advancement of Photography in Berlin.

The Lichtdruck was very often discussed, and we have received fine specimens of it from M. Albert, and from Ohm and Grossman. There are now in Germany ten or twelve "inventors" who all work in Lichtdruck. It is an old story, that if anyone make a good invention, there arise many persons who assert that they have known the same thing for some years. There are also others who have indeed worked in the same direction as the first inventor, but without success, and only after the publication of the patent of the successful inventor, enlightened by his ideas, begin to secure success. This is the fact with M. Albert's Lichtdruck. It is said that Albert's process is very similar to Tessie du Motay's; but Albert's prints are by far much more excellent than Tessie's. Albert introduced some very important novelties—as, for instance, the working on glass plates instead of copper-plates, the coating with a preliminary layer of gelatine and chromate, and lighting it from back. And Albert was the first who introduced these modifications; all the subsequent inventors only learned their *modus operandi* from M. Albert's patent, as at first published in France.

M. Albert has now erected a large printing establishment, and he already delivers for sale different art publications. In other photographic establishments the Lichtdruck at present is not employed, and the most important attainment to introduce here is the printing process itself, which wants a very excellent printer.

Doubtless you have read of the backgrounds and reflectors of Mr. Kurtz, of New York. Mr. Kurtz has sent to me a series of excellent portrait pictures, cabinet size, which belong artistically to the best I have ever seen, not only in posing and lighting, but also in the very fine gradation of tints. Mr. Kurtz had introduced some time before a cylindrical hollow background. If you place a person before this, and light it from one side, the background will be tinted—behind the light side of the person dark, behind the shadow side of the person light—and you obtain in this manner an effect like that of Adam-Salomon. Now Mr. Kurtz has introduced a hollow spherical background, and in this you have the same gradation of tints, but not only in the direction from right to left, but from one light point passing in all directions. The effect is excellent indeed, and MM. Loescher and Petsch, and Prius, the well-known photographers in Berlin, will introduce this spherical background into their studios.

A day before my departure I was in Hamburg, and I saw an admirable telescope by Mr. Schroeder, one of our best opticians—not only a practical, but also a scientific man. The telescope is designed for an amateur astronomer, M. le Baron von Bulow, residing near Kiel, and it is arranged not only for eye-observations, but also for photographic purposes. The object-glass has a diameter of 300 millimetres, a focus of 5 metres, and gives a lunar picture of 45 millimetres, which is enlarged by an extra set of lenses from 80 to 200 millimetres. For making such a picture it is necessary to have a very fine clockwork, and Mr. Schroeder has introduced on his instrument two clockworks: one for rectascension, and one for declination, for following in the exactest manner the movements of the moon. I have proved this instrument only optically, and I can testify that I have never before seen such an excellent picture of the moon; it seemed as if formed from plaster, the different terraces of the ring mountains being admirably visible. Therefore it would be very easy to take a photograph of the moon or of the planets, if there were not a fatal impediment—that is, the constant movement of our atmosphere. I made observations with Schroeder's telescope for about two hours. The heavens were quite bright, but I had only two or three moments in these two hours when the picture in the telescope was without trouble. This would not be trouble if the exposure was very short—perhaps instantaneous—but for making an enlarged moon picture one must employ an exposure of about one minute; and if the atmosphere is only a little disturbed, it is impossible ever to take a sharp picture with the best instrument.

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* We took the view of the interior of the studio, when we first examined it, for a street view after a snow-storm.—ED.

In my last letter I published some observations on perspective errors as the influence of distance of angle of view in portrait photography. Allow me to add here some observations on the influence of the diameter of lens. Take a knife, hold it in your hand about twelve inches before your eyes, the sharp side directed against yourself, and look on this sharp side with your eyes; then you see not only the sharp side, but also the surface of the steel blade—that is, the right eye will see the right surface, the left eye the left surface of the blade. Now imagine, instead of your eyes, a portrait lens, whose diameter is as large at least as the distance of the eyes. Certainly the right side of the single lens will have the aspect of the right eye; the left part the aspect of the left eye; and therefore you look—if you make this experiment with a camera on the ground glass—not only on the edge, but at right and left of the picture of the blade surface. If you cover the right side of the object-glass, the right surface of the knife disappears; if you cover the left side of the glass, then disappears the left surface.

In this manner, if you work with an object-glass of very large aperture, the different parts of that aperture give different pictures of an object before it, which are reduced on the ground glass to one picture. Certainly the excellent relief we admire in pictures taken with lenses of large apertures is caused by the influence described. This would be an advantage; but, in some instances, arise also disadvantages from this influence of aperture. If you take pictures of narrow objects, which turn their sharp side to the apparatus, the objects appear in the picture broader than in the reality, by reason of the described action of aperture; and this is often the case in portrait pictures with the nose, if you take the person's face at a short distance. Such large noses are well known; we name them in Germany *potato* noses.—Yours very truly,

DR. H. VOGEL.

ON THE PREPARATION, PRINTING, AND TRANSFER OF CARBON TISSUE.

BY M. GOBERT.[*]

IN describing to the Society the various methods to which I have recourse in the production of carbon prints, I do not in any way suppose that I am bringing forward a novelty, for the process has indeed been indicated by several authors. My intention is simply to assist in vulgarising this interesting mode of printing, and to show that the results attainable are not only equal to those obtained by silver printing, but are likewise reliable and certain.

At the same time I would call special attention to my method of development, which permits of an easy and sure mode of transfer, and which has not, I think, yet been published

My gelatined and pigmented tissue are prepared in the following manner, the gelatine used by me being that of Grenet, of Rouen, although the material manufactured by Dieuze I have found equally serviceable:—

I place upon a glass plate, well levelled, a thick, unsized sheet of paper, the kind used by printers being very suitable; the sheet is well moistened with water, and thus made to stretch out upon the glass, the four corners of the paper being bent up, to form a tray, into which the solution of coloured gelatine may be poured. It is very necessary that too much gelatine should not be deposited upon the paper, as, with a thick coating, the tissue cockles up during desiccation. I have calculated that 0·80 grammes of dry gelatine is sufficient to cover 100 centimetres square of surface, thus giving, for the following dimensions, as under:—

18×24 centimetres	...	3.45	grammes	of gelatine
21×27 ,,	...	4.53	,,	,,
27×33 ,,	...	7.12	,,	,,
30×36 ,,	...	8.64	,,	,,

These figures need not, of course, be absolutely adhered to, but I indicate them as a guide to the operator, cautioning him not to deviate very much from them.

A seven per cent. solution of gelatine in water is a good proportion of that substance to employ, as, of this consistence, it will be found to flow readily upon the paper, and to set within the space of a quarter-of-an-hour in an ordinary temperature. The sheets are suspended on a line to dry, those prepared one day being sufficiently desiccated the next. They are rolled up, the prepared surface outwards, a precaution which subsequently facilitates their immersion in the sensitizing bath.

The mixture of the powdered pigments with the gelatine is an operation of great importance, and should be very carefully attended to. The finer and lighter the pigments employed, the better and more delicate are the prints. Indian ink diluted with water would be the most suitable colouring matter for the purpose, but, unfortunately, the tints produced with it, especially the half-tones, are of a very cold nature. Great care must be taken not to employ any pigments containing fatty matters, even in minute degree, as the latter form with the gelatine and bichromates (even in perfect obscurity) an insoluble body. In the same manner it is essential to avoid the use of foreign substances—such as gum, honey, sugar, albumen, &c.—as all these likewise produce, after a certain time, an insolubility of the gelatine. The colours must be exceedingly well ground in water only, prior to employment.

The chemical constitution of certain colours has likewise a tendency to bring about an insoluble compound, and such pigments must, of course, be excluded; among these may be cited the salts of mercury. But I shall, before long, again revert to the subject, as it is one of infinite importance, the judicious admixture of pigments furnishing photography with a palette of the richest and most varied tones.

The sensitizing of the tissue is effected by plunging the same in a three or four per cent. solution of bichromate of ammonia. The paper is immersed, the gelatine side uppermost, for a period of two or three minutes, according to the temperature. In very warm weather it is by no means rare to see the gelatine dissolve in the sensitizing bath. The paper preserves its sensitiveness unimpaired for several days. On drying, as one might imagine, the tissue exhibits a great tendency to cockle up. To remedy this inconvenience it is sufficient to place the sensitized material in a moist locality, or simply in a box containing a vessel of water. In the space of a few minutes it will have absorbed sufficient moisture to render it supple, and may then be easily manipulated in the printing frames.

It is, of course, impossible to fix accurately the period of exposure, but the sensitiveness of the tissue may be roughly estimated at five times that of silver.

The development of my prints is conducted in two ways—that is to say, either with or without transfer of the film. When the *cliche* employed is itself reversed no transfer is needed; this will, without doubt, be the process of the future, as results are thereby easily and rapidly attained. M. Jeanrenaud gave a skilful demonstration of this mode of proceeding before the Society a short time since, and its points may be summed up in a very few words:—A sheet of albuminized paper is rendered insoluble in alcohol, pressed into contact at once with the exposed film, and the image then developed in boiling water.

When the *cliche* is not reversed the image must be transferred, and, under these circumstances, my mode of proceeding is as follows:—

After printing, I pour upon the face of the tissue a film of normal collodion (one per cent. strength), and place the sheet upon a piece of albuminized paper coagulated with albumen, and still moist with that liquid; the two surfaces are pressed well together for a short time, and the image is subsequently developed in the ordinary manner with warm water; the result is a reversed picture, which is again transferred by simply placing in contact therewith a moistened sheet of paper, putting the same under a press to insure perfect adhesion, and allowing it to dry; the whole is then plunged into a mixture of alcohol and ether, which dissolves the collodion film, and thus separates the image from its former support. Two hours are necessary to effect the softening of the collodion and to rob it of its adhesive qualities.

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[*] Read before the French Photographic Society.

As will be seen, therefore, I employ the principle of Mr. Swan, substituting, for the india-rubber paper, a film of collodion, and a mixture of alcohol and ether for the benzole. My results are never defective, and the cost of the solvents is not great, as they may be used over and over again.

MANIPULATIONS IN JOHNSON'S CARBON PROCESS.*

14. *The Transfer.*—The dry print has now to be transferred to its final or permanent support—that is, to the enamelled surface of the transfer paper. All that is requisite for this purpose is to soak the piece of transfer paper to be used in water at a temperature of 120° to 130° Fahr., and to allow it to remain therein until the enamel surface of the paper has not only become swollen, but acquired a slimy feel. Unless this condition be attained, the adhesion between the print and the transfer paper will not be complete in the darkest parts of the picture. When this stage is arrived at, the print and plate must be plunged into clean water, and lifted horizontally, to retain as much of the water as possible. The plate is then laid upon the stool, placed within the second dish, and the transfer paper, lifted carefully by the two opposite corners, is applied. The india-rubber scraper is then used as in mounting the exposed pigment paper upon its temporary support (12); that is, the whole of the water and air must be removed by the scraper, and perfect contact of the surfaces effected. If this be done with care, not a single speck or bubble of air will remain, and the print when dry will leave the plate perfectly clean, having the exact surface which the plate itself presented.

15. *Removal of the Transferred Print.*—The plate, with the transfer paper attached, as just described, is placed in a rack to dry. This is best done in a current of warm, dry air, rather than in front of a fire or stove. When the drying is complete, and not too hastily effected, the print falls from the surface of the support straight and flat, or is removed therefrom by the slightest touch. If too hastily dried, it becomes buckled or cockled, and is flattened with difficulty.

16. *Finishing the Transferred Print.*—If it be desired to retain the pure matt surface of the transferred print, it should be cleansed with a little spirit of turpentine, and rubbed well with a clean soft cloth or piece of wash leather. If the print is to be tinted or coloured, benzole should be used, and the cleaning done with great care, so as to remove the last traces of the fatty body dissolved by the benzole.

If a less matt surface be desired, the fatty body (10) should be employed: this acts as an "encaustic paste," filling up the grain, and allowing the surface to take a moderate polish when rubbed with the wash-leather. This should be done after the print has been touched or tinted. These touches or tints should be given to the Autotype prints with ordinary moist water-colour, using water, in each ounce of which two grains of chrome alum have been dissolved, as the medium or vehicle. The brush, wet with this solution, should not be allowed to touch the pan of colour; but a little colour should be lifted from the pan, and placed on the palette, a little ox-gall added, and to this mixture the chrome water should be added when wanted. The effect of the chrome salt is to render the moist water-colour perfectly insoluble when dry, so that it is not removable by water. The colour thus applied is then exactly of the same nature as the insoluble pigment film.

II.—NON-INVERTED PICTURES ON PAPER, WITH POLISHED OR "ENAMEL" SURFACE.

17. *Temporary Support with Polished Surface.*—In the preceding class of pictures a ground or grained plate has been used, but this is not essential. A polished plate of glass or other substance may be employed, in which case the face of the resulting print is polished; but when the surface of the plate is of this nature it is difficult to get the fatty body to smear upon it without detracting from the original polish of the glass. Lines and marks showing the existence of the wax and resin remain, and cannot be entirely removed, except with considerable labour, and after some practice. When this is done, however, a print with a bright polished surface is obtained by the manipulations before described.

18. *Modified Preparation of the Temporary Support when Polished.*—To avoid the trouble of polishing the plate with the fatty body, it may be coated with very thin collodion, and the film allowed to dry. A brush dipped in negative varnish, or in weak solution of india-rubber in benzole, must be run round the edges of the plate, to hold on the collodion during development, and the plate treated exactly as before.

19. *Glazing the Surface of the Print.*—If a mere glazed surface, like that of an albumen print, be desired, it is obtained more effectually, and with greater simplicity of manipulation, by developing the print upon a plate of very fine grain as the temporary support, and, when it is transferred to the enamel paper, coating it with a slight layer of collodion, albumen, or varnish. By this means a more brilliant result is obtained, while it offers the advantage of enabling the print to be touched, or even tinted or coloured, before the glazed surface is applied, for this cannot be done subsequently.

20. *Enamelling the Surface of the Print.*—If a still more polished, or so-called "enamel," surface be desired, the print, after touching or tinting, may be coated with collodion in the following manner, viz.:—Coat a sheet of plate-glass with plain collodion, as thin as possible; that is, so thin as not to give iridescent colours on the face of the print when finished. Allow this to become quite dry. Soak the print to be enamelled in the following solution, kept hot:—

Gelatine	1 ounce
Hot water	60 ounces
Chrome alum, dissolved in one-third of the hot water...	10 grains.

Lay the soaked print face downward on the collodion surface, and, with the india-rubber scraper, remove the superfluous fluid, and place the plate and print in a rack to dry. When perfectly dry, the collodion, with the print firmly attached to it, may be readily removed, and will be found to have as perfect a polish on its face as that of the plate-glass employed.

The surface thus produced may be declared objectionable and "inartistic" by artists; but it is impossible to reproduce all the delicacy of gradation and perfection of definition of which the negative on glass is capable, without some similar means. The brilliancy of the pigment is also greatly enhanced, and its tint modified by this treatment. Autotype prints with enamel surface must be compared rather with Daguerreotypes than with silver prints on albumen, as regards delicacy and perfect half-tone.

It will be seen that the new method of producing enamel surfaces just described is much simpler than that which has hitherto been practised, while the result is more perfect. The attachment between the collodion film and print, instead of being effected by a layer of soluble gelatine comparatively thick, is produced by one of gelatine and chrome alum infinitely thin, a preparation which is perfectly insoluble in water after it has become quite dry.

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* Continued from p. 247.

21. *Mounting the Enamelled Print.*—Prints thus enamelled lose the general polish of the plate, upon which the collodion has been poured after being mounted, retaining, however, much lustre and gloss. If it be desired to maintain the general polish of the plate, the mounting must take place before the print leaves the collodionized plate. Mr. Sarony now prints the whole of his carte and cabinet pictures in this style, mounting them on card upon which a thick layer of dextrine has been spread.

The print, if we understand his process correctly, is trimmed and laid down upon the collodion surface, with the interposed layers of gelatine and chrome alum, and, while still adherent to the plate, the dextrine coating of the cardboard is softened by a jet of steam, and pressed strongly down upon the back of the print. As the adherence takes place without sufficient moisture to affect the gelatine surface, the polish of the glass is maintained.

Probably a better way is to mount the print, when laid down upon the collodion coating, and while just scraped free from the adhering gelatine solution, upon a piece of stout plate paper, which has likewise been plunged into a gelatine solution prepared as follows, viz.:—

Gelatine	3	ounces
Glycerine	$\frac{3}{4}$	„
Hot water	60	„
Chrome alum, dissolved in one-third of the hot water	10	grains.

The plate paper is laid upon this solution while hot, until the back has become wetted by the percolation of the fluid, when it is raised, allowed to drip, and then laid upon the print. The scraper is used, but with slight force, to remove the bulk of the gelatine and the adhering air-bubbles, and the whole is then allowed to become dry, when the print leaves the plate duly enamelled, and mounted upon stout paper, well sized, and stiffened with insoluble gelatine.

Instead of enamelling and mounting the print already transferred, the plate paper mount may be applied to the picture film, developed on the polished collodionized plate (18). The print film is thereby transferred to and mounted on the stiffened plate paper rendered partly translucent by the gelatine. An agreeable style of picture is thus produced, with a surface equal to glass. To those who admire the "Eburneum" process of Mr. Burgess, this variety of carbon print will be very pleasing, combining the perfect permanence of the pigment print with the charm of the "Eburneum," for the gelatinized plate paper resembles Mr. Burgess's artificial ivory compound, but is much more easily produced, as the drying is very rapidly effected. Instead of porous plate paper filled with insoluble gelatine, we can use any enamelled paper, either for transferring the film (14), or for mounting it subsequently (21). We have only to immerse one of these papers in the gelatine and chrome solution, and to lay it upon the dry picture film, while on its temporary support (14), or upon the transferred print while being enamelled (21).

(To be continued.)

COLLODIO-BROMIDE PROCESS.

BY M. CAREY LEA.[*]

Pyroxyline.—I will briefly state the difficulties presented by pyroxylines. Some specimens, when coated upon the plate, appear at first to be perfectly even, but, if examined by holding up to the light, show an unevenness which, when slight, is a mere clouding, parts being a little thicker, others a little thinner, and so gradually blended that no demarcation of either can be found. When this is very slight it does not spoil the plate. When the cloudy disposition is strongly marked, it produces a mottled film all over the plate, worse at the corner where poured off. This mottling is apt to show in the negative, especially in flat tints like the sky. Other specimens show a want of intensity, so that the development cannot be complete with alkaline pyrogallic acid, but a re-development with pyrogallic acid and silver must be used. Others, again, let the developer through in irregular spots like tesselated work or coarse mosaic, showing in the finished negative in stains all over the plate. A good cotton is completely free from all tendency to these faults.

Sensitizing.—I find the best results from adding two drops of aqua regia to each ounce of collodion, and sensitizing with eighteen grains of nitrate of silver. Where there is a want of intensity this may be aided by adding one grain of chloride of copper. In this case the nitrate of silver must be raised to twenty grains, and a little more alcohol used in dissolving it—say two and a-half to three drachms to each twenty grains.

Bromide of Cadmium.—It is desirable not only to have a pure specimen of bromide of cadmium, but also to keep it well corked. This substance is only known commercially in the crystallized state—that is, the substance that we use does not merely consist of bromine and cadmium, but contains also four equivalents of water to each equivalent of bromine and of cadmium. The crystallized salt has a strong tendency to effloresce in dry air: it turns white, and loses one-half of its water of crystallization. Of course this change alters its relations to nitrate of silver, so that, in the effloresced state, it requires more nitrate of silver to decompose it. But a change of this kind is not often so complete as to enable us to calculate the exact changes in quantity necessary to compensate for the loss of water. Effloresced or whitish bromide of cadmium should therefore be avoided, and the clear, transparent salt only should be used. An examination of a bromide of cadmium bottle that has been left uncorked for a moderate time in dry weather will enable the operator at once to recognize the difference between the two sorts. Such a bottle will be apt to show a white opaque layer of effloresced bromide on top of the same substance in its usual condition.

Penetration of Solutions.—I have lately noticed, in one or two instances, the following occurrence, after having made many hundred plates without knowing it to happen once: the preservative bath penetrated the film and made a sort of blister, some of the solution remaining between the film and the glass. I have only seen this happen with an old collodion made out of an old pyroxyline kept over two years before dissolving. The remedy lies in not leaving too long in the washing-bath, or in using fresher materials.

Sensitiveness.—To exhibit the extraordinary sensitiveness of this process I give the following:—On the twelfth of this month I exposed a plate (before eight a.m.), for ten seconds, which proved to be an ample exposure: size of plate, 6½ by 8½; stop, $\frac{1}{25}$ focal length. The development was easy and rapid, complete in four or five minutes, no re-development needed. The subject was not a wide or distant view, no object appearing on the plate more than one hundred yards distant. The foliage was full of detail. With an extended view at mid-day and a large stop the exposure might have been greatly reduced. I think a wet plate would have needed twice the exposure. This plate was prepared with gum and sugar only.

Preservative.—When the preservative is gum and sugar, either alone or with litmus or tannin, the proportion of gum should never be less than fifteen or eighteen grains to the ounce.

WEIGHING AND MEASURING.

BY M. CAREY LEA.[*]

Although weighing and measuring appear to be, and are, operations of a very simple order, they are, nevertheless, the sources of very many mistakes to those who have not paid a certain amount of attention to the ordinary causes of error. I have, therefore, thought that a brief exposition of the right and the wrong ways of taking weights and bulks of substances would not be unacceptable, at least to those who are not thoroughly versed in the manipulations.

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[*] *Philadelphia Photographer*

[*] *Philadelphia Photographer.*

Weighing.

Every one who undertakes to photograph well should possess a reasonably good balance. I do not speak here, of course, of delicate analytical balances turning with the hundredth of a grain, but of good common balances turning on knife-blades, and moving immediately with a quarter of a grain; and I may remark here that an easy way of testing this, by those who do not possess fractional weights, is by cutting up pieces of paper, or, better, of tin-foil. If a nearly square piece be weighed off, weighing four grains, and the smooth, hard letter-paper or the tin-foil be cut into sixteen equal pieces, we have so many quarter-grain weights, well suited for testing a balance; and a balance that will not give an easy and decisive indication by the addition of such a quarter-grain fragment, when loaded with a drachm in each pan, is unfit for use.

The French *trebuchet*, or tilting balance, is much the more agreeable sort to use. The beam is thrown upon its suspension by pressing a lever; on letting it go again, the pans return to the board.

Another important point, after having ascertained the sufficient delicacy of the balance, is to habitually be on guard against sticking. Neglect of this point has led to thousands of errors in weights, and vexations, and inexplicable failures in the operations connected with them. "Sticking" arises from this: When the pans are not far from equally loaded, a very slight cause will deprive the beam of freedom of motion; it may not rest exactly square on its supports, or some grains of dust or other foreign body may have got on the socket under the knife-blade, or there may have been a slight tendency to rust. Any of these, and perhaps other causes, may preserve the beam from oscillating; meantime, the needle points exactly vertical, and the weight seems to have been correctly taken, when, perhaps, it is wrong by enough to seriously affect the next steps to the operations.

The only sufficient safeguard against this dangerous mistake is never to take a weight with the needle in this condition, never to depend upon the needle pointing directly to the centre of the index, but always to make the needle oscillate, and to see that at each oscillation it moves to an equal distance on each side of the centre, as far to the right as it does to the left. With a needle moving freely, and passing to an equal distance on each side, anything like sticking is impossible, and the operator feels safe that his weight is correctly taken, provided that his weights are correct.

The weights that are offered for sale are often very carelessly made. The greater part of the sheet brass weights that are to be found in the market, in sets of from half a grain to six grains, do not give indications, for the most part, of ever having been adjusted. The brass is rolled to as uniform a thickness as possible, and then the weights are cut out by size; and similarly with larger weights.

To show how carelessly these weights are made, I have several sets by the same and also by different makers. In two sets made by one and the same maker, the ten-grain weights differ by over one grain, the one being about as much too heavy as the other is too light; also a six-grain weight proved, on comparison with my exact platinum standard, to be nearer seven grains than six.

The worst, however, that I have seen are some "bar weights" made in New England, and largely advertised and sold all over this country. The shape of the "bar weights" is much better than that in common use; all the weights have the same breadth and thickness, and differ in length only; thus the one-grain is a small square piece, the two-grain is twice as long, so that the ten-grain is a long narrow strip. Each is stamped with as many small circles as it is intended to weigh of grains, and, to prevent mistakes between those of equal size, the even numbers are cut off square at the ends, and the odd numbers are cut off diagonally. The whole plan and arrangement is excellent, but a very insufficient amount of care has been taken in the regulating. I have weighed a considerable number of them, and found them vary much; some few are correct, most of them a good deal over-weight.

Brass weights are liable to the additional objection that they rust if exposed to acid vapours, and are acted upon by alkaline chlorides, iodides, and bromides. In all these cases they gain in weight, and, if cleaned off, weigh less than they originally did.

The difficulties here enumerated are so serious that every one who feels interested in working with exactness should own a set of platinum weights. These need not be adjusted with the extreme accuracy necessary for weights intended for chemical analysis, but should be sufficiently correct for ordinary careful use. Platinum has the inestimable advantage of never oxidizing, and, if the weights are kept with any care, they do not tarnish in the least. In my own case, I adjust a set of ordinary brass weights by my analytical set for ordinary use. As the weights sold are almost invariably too heavy, they can be filed down until right. In case any are too light, those, of course, cannot be adjusted, but this is quite uncommon. If it happens, another set must be procured. In fact, it is always convenient to have duplicate weights, and therefore it is best to adjust two sets at once, and be provided against loss.

Another source of error lies in mistaking the weights themselves, or mistaking the count. To guard against this, the weights should always be counted twice. After the weight has been taken, and before the material is used or even removed from the pan, the weight should be taken out, and recounted as this is done.

Our system of weights and measures is certainly a disgrace to any civilized people. It is highly conducive to mistakes, and very troublesome. To have two ounces, one of 480 and the other 437½ grains; two pounds, the one of 7,000 grains, the other of 5,760, is bad enough. Of late, to add to this confusion, a second drachm has been introduced, viz., the eighth of an avoirdupois ounce instead of a troy ounce, and, consequently, about four grains short of a true drachm. It is to be hoped that, in time, the French decimal system will come into universal use.

(*To be continued.*)

EXTENSIVE PHOTOGRAPHIC PIRACY.

John Conroy, who had been apprehended on a warrant, as stated in our last, surrendered to his recognizances on remand, on Tuesday, before Alderman Sir Thomas Gabriel, to answer the charge of infringing certain provisions of the Act 25 and 26 Victoria, cap. 68, for amending the law relating to copyright in works of the fine arts. Mr. George Lewis, jun., solicitor, again conducted the prosecution, and Mr. Beard appeared for the defence. An objection to the jurisdiction of the City magistrate and to Mr. Nottage's authorship of the pictures having been over-ruled, the decision as to the amount of penalty stood over until another charge against the defendant was heard.

It appeared that Conroy had also been engaged in selling pirated copies of engravings, and Mr. Graves now appeared to charge him with offering for sale photographic piracies of various of his copyright pictures, especially including "The Piper and Pair of Nutcrackers," by Landseer; the "Last Kiss," by Miss Edwards; "Ordered on Foreign Service," by Collinson; "I Take this Opportunity," and "The Offer," by Faed.

Mr. Chipperfield, who in this case appeared for the defence, subjected Mr. Graves to a long cross-examination, the main object of which was to elicit that his copyright only extended to the engravings, and not to the design of the pictures themselves. Mr. Graves maintained that he had in all cases purchased the copyright in the subject or picture itself, which included the right not merely in the design as engraved, but as produced in any form.

Mr. Boydell Graves proved that the defendant had been summoned before for a similar offence, but they had not proceeded with the summons, but forgave him on the ground of his poverty.

The offering for sale having been proved by other witnesses, Mr. Chipperfield endeavoured to show that in some cases the registration was not good, from inaccuracy as to dates. In others he denied that the provisions of the Act had not been complied with as to the agreement in writing in disposing of the copyright, nor as to the registration of any such agreement. He contended that in some cases there was no proof that Mr. Graves had a copyright in the original picture, his copyright being confined to the engravings, the remedy for the infringement of which was of a much less summary nature than that provided for protection of copyright in paintings, and he protested against the remedy for infringement of copyright in engravings being sought under this Act as an injustice to the defendant.

Sir Thomas Gabriel said that in his judgment Mr. Graves had complied with all the requirements of the Act, and the case against the defendant had been proved to his satisfaction. He therefore imposed a penalty of £5 for each attempted sale of Mr. Graves's five pictures, or £25 in all, with the alternative of two months' imprisonment for the first copy, and fourteen days each for the remaining four cases. For the two sales of the portraits of Mrs. Rousby and Longfellow he must be fined £10 in addition, or suffer a further imprisonment of ten weeks. It was understood that the defendant would pay the fines.

◆

Correspondence.

CLEANING PLATES.

Sir,—A short time since I wrote to you giving my system of using plates after being varnished—that is, of dropping them in *boiling* water with a little common washing soda in it. As all photographers have a great many of these, it is of great importance to them to know of a *sure* and easy method of preparing the surface ready for the collodion; and, with your permission, I will give you my *present* method.

After taking them out of the soda-water, simply apply Mr. Jones's method with his Tunicare to them, and in no case will they fail to produce bright and clean pictures, quite equal to new plates. In fact, I use the Tunicare to all new plates; it keeps the film from slipping if you happen to have too much acid in bath or developer.

I am confident all who have used the Tunicare will agree with me when I say it is one of the most useful liquids ever introduced in the profession.—I am, yours obediently,

Robert W. Barnes.

22, *Nevill Street, Southport, May 30th*, 1870.

DR. DIAMOND "*RE* PAUL PRETSCH."

Sir,—I did not arrive at the last meeting of the Photographic Society until after the reading of Dr. Diamond's letter enclosing a communication from Mr. Pretsch, which, however, was not read, but reserved for the next meeting. I have only just seen Dr. Diamond's letter, which is published in the recent number of the Society's Journal.

I am surprised that Dr. Diamond did not give the best answer to my statements about Mr. Pretsch and his so-called process, viz., backing up his letter by submitting to the meeting the "plates *entirely untouched*" (the doctor's own words and italics), and unsophisticated prints therefrom side by side with the originals from which the plates were engraved, together with reasonable evidence that the aforesaid plates were the handiwork of Mr. Paul Pretsch himself. I say I am surprised, especially as Dr. Diamond further says and italicises that this untouched condition "was the case with some of his [Pretsch's] *very best productions*."

Again: would Dr. Diamond kindly explain the meaning of his sentence—"Had his [Pretsch's] resources been more abundant I think his success would have been greater." How many more thousands beyond the thousands of pounds spent on the process does Dr. Diamond consider sufficient resources for a man who was able to produce "*entirely untouched*" photo-engraved plates capable of yielding proofs worthy of the high encomiums now lavished upon them?

Is Dr. Diamond also aware of the following facts? Namely, that when I formed the company I stipulated and obtained for Mr. Pretsch £150 down to repay the firm Kronheim and Co., with which I had been connected, the amount they had fruitlessly expended in affording Mr. Pretsch the opportunity of working his patent, which, had it been successful, would have been a valuable adjunct to our business, and would have ensured a good position for Mr. Pretsch. Kronheim and Co. were not, however, the first in this country who took up Mr. Pretsch and—dropped him. He had been previously assisted by Mr. Letts, of the firm of Letts and Sons, Royal Exchange. Had Mr. Pretsch produced plates such as Dr. Diamond describes, and yielding satisfactory proofs, Mr. Letts was not the man to allow so valuable a patent and so invaluable a magician to be transferred to another printing firm. At least, this is not the usual course with English men of business in the nineteenth century.

In addition to the £150 above mentioned, I obtained for Mr. Pretsch £100 in cash. When I took him up he was out of employment, and, indeed, at a low ebb. Nobody would take up his process, and his patent would have soon lapsed for want of funds to complete it. I further secured for Mr. Pretsch—a single man, by the way—a salary of £208 per annum and an equal share in the company. What "greater resources" does Dr. Diamond think ought to have been Mr. Pretsch's? Would £1,000 per annum have made his ability and success more conspicuous?

Once more: is it to count for nothing that, if business warranted it, fresh capital to any amount would have been forthcoming at a very short notice? And shall we quite ignore the fact that an efficient staff of hands who "meant business," and every necessary appliance, was at Mr. Pretsch's disposal? Indeed, there was a fine chance for photographic engraving in this country when the Photo-galvanographic Company commenced operations; but, unfortunately, it had the dead weight of Mr. Paul Pretsch at its heels. He had every inducement to show himself a true as well as a skilful man. But what was the case? He who pretended to a deep knowledge of chemistry, photography, and electrotyping, and styled himself *the* manager of the Imperial Printing Office, Vienna, did not even understand the rudimentary principles of chemistry involved in his so-called process, and could not, when put to the test, take a view of our premises at Holloway with apparatus which he had from Vienna, and for which, on his representations to me, I had induced my partners to authorise me to pay him the sum of eighty pounds, but which apparatus Mr. Fenton, who subsequently joined the company, not knowing whence it had come, characterised in Mr. Pretsch's presence and mine as "rubbish."

With regard to Mr. Pretsch's electrotyping, it was a perfect *fiasco*, proving incontestably, even had there been no other evidence, that the plates he showed here, and which he told me he had produced at his private lodgings in Vienna, were not by the same hand which produced the abortion which, after much hissing and fizzing, emerged from the apparatus fixed up by Mr. Pretsch himself. This was the first and last of his electrotyping for the company. His photographic failure now certainly made me doubt his ability to produce, as he said he had done, those large photographs of Viennese buildings which he exhibited in this country in 1854 or 1855. Whatever his other talents may have been, he was no manipulator.

As to having been the manager of the Imperial Printing Office, Vienna, I will charitably describe it as—hallucination. There may be a difference in German, but certainly in English it looked uncommonly like an attempt at misleading to have cards printed with "Mr. Paul Pretsch, late the manager of the Imperial Printing Office, Vienna—Councillor Auer director." The real fact was that Councillor Auer was director in the sense of being *the manager*.

Dr. Diamond speaks of Mr. Pretsch's experiments. He experimented, truly. But what experiments? Haphazard, floundering, and fog!—nothing systematic, careful, scientific; and, withal, a stolid (not to use a harsher term) opposition to everybody and everything capable of reducing the process to anything like certainty.

This is no distorted picture. I am ready to bring forward those who can prove my words. Mr. Pretsch also knows well enough that all that was asked and expected of him at Holloay was to produce good plates which would not require en- ravers' work. Now that the money is all gone, it would seem om Dr. Diamond's statement as if Mr. Pretsch had done such lates for a favoured few. Yet why are these plates not pro- uced? They would be interesting curiosities. It was hardly ir, however, to leave our poor company barren of the results such skill.

I must say I am surprised that Dr. Diamond should mention r. Warren De la Rue as a supporter of Mr. Pretsch almost in e same breath that he laments the limited nature of Mr. retsch's resources. Why the doctor unconsciously discloses nother of Mr. Pretsch's good opportunities. The De la Rues ere always considered to be acute men of business, and it is, I ould say, pretty certain that Mr. Warren De la Rue did not ke up Mr. Pretsch for purely philanthropic reasons. Has Mr. retsch been able to do what he professed and what Dr. Diamond serts he did—the production of photo-engraved plates *ntirely* (Mr. Pretsch used to tell people 'absolutely') *un- uched* by the engraver," and capable of yielding, I will not say rfect impressions, but commercially presentable results? I y, had this been the case, Mr. Warren De la Rue, or the great m of De la Rue and Co., would not have allowed the *rara avis* fly back to Vienna.—I am, yours, &c.,

May 28, 1870. Duncan C. Dallas.

[There are two facts which Mr. Dallas seems to overlook, which o, we think, most necessary to be remembered in considering subject of this kind: First, that the absence of commercial suc- ss is by no means an argument against the intrinsic excel- nce of a process; and, second, that there is not, at this moment, ter all the experiment by many able hands, during so many ars, a single photo-engraving process in existence which yields rfect or even presentable impressions, from nature, without e aid of hand labour on the plate. All encomiums are therefore cessarily of a relative and qualified character. It must be rne in mind that the discussion originated in a distinctive aim for superiority in certain prints exhibited at the Society, cause the plates were untouched, and Mr. Pretsch's plates ere worked upon. The reply of the president was, that he d seen untouched plates which yielded prints equal in excel- nce to those produced. That is the point which will, we be- eve, be set at rest at the next meeting by the production of e plates.—Ed.]

RED DEPOSIT ON USING GOLDEN SYRUP.

Sir,—In working wet plates in the field, I have frequently ed the preservative composed of golden syrup, alcohol, and ater, of which the formula appeared in your paper. It rtainly prevents the drying of the film very effectually, and lows any amount of subsequent development; but I have found tendency to form a deposit on the deepest shadows here and ere (not uniformly) over the plate, which, before fixing, is ack by reflected light, and after, by transmitted light, it is a in coppery colour.

Have you heard of this from any other quarter? If you any correspondent could point out to me how it is to be oided, I should be very much obliged.—Yours respectfully,

28*th May*, 1870. J. M. A.

[The copper coloured deposit arising during intensifying not an uncommon defect where no syrup is employed, pecially during hot weather; but whether it occurs from any pecial cause in connection with this method of keeping the te moist, we are uncertain; we have not heard of any case. e shall be glad to learn whether the same thing has occurred the experience of any of our readers. In the meantime r correspondent will do well to take care to eliminate the linary causes of this defect.—Ed.]

Proceedings of Societies.

New York Photographic Society.*

e May meeting of the Photographical Section of the American stitute was held at the usual place, Mr. Chas. Wager Hull, e-president, in the chair.

Mr. Mason, referring to the merits of Mr Newton's process preparing silvered paper, thought it was just what was nted. As he had not yet concluded his tests of the process. it was agreed to postpone its consideration until the June meeting.

Mr. H. T. Anthony had resorted to many expedients to keep silvered paper. With two floatings upon distilled water it kept well for nine or ten days, but at the end of thirty days it became yellow. He also stated that if silvered paper was floated upon three changes of ordinary drinking water, it would keep well for a month, which he thought was probably due to the trace of chloride found in all such waters. Such paper must be printed in fumes of ammonia, which was easily accomplished by having the pad in the printing frame well charged with it; and also that, in addition to this, the paper should be fumed in the usual way.

Mr. Newton stated the results of his comparative experiment with his tea process and Lea's collodio-bromide process. He exposed plates prepared by each, subject to same conditions; fully followed Lea's directions; but could not obtain a negative of sufficient intensity; with his own he had no trouble. He stated that the time and labour saved in the collodio-bromide process was lost in the tedious development; while with the tea and iron developer all worked quite to his satisfaction.

Mr. Chapman thought most favorably of the collodio-bromide process. He was not at all troubled for want of intensity, but quite the contrary; he had too much. He considered the charm of it was in the latitude allowed for exposure. He had exposed at the same time upon a view, thirty seconds and four minutes, and exhibited prints to prove his statements; one was as good as the other, and to distinguish the long from the short exposure was simply impossible.

I have not worked by either process, but have seen superb work by both. Three eight by ten views of collodio-bromide received a few days since from Mr. Carey Lea most assuredly leave little to ask for. They are full of detail in the shadows, soft and well balanced in their contrasts; indeed, are quite perfection.

Mr. Newton exhibited some very fine glass positives made with collodio-chloride, and printed from the negative by contact. The tone was of a rich warm chocolate, to obtain which he flowed the plate after development with a solution of pyro one grain, silver eight grains, water one ounce; washed well, toned with gold, and fixed in hypo. He said that in making transparencies by this process it was important to dry the substratum of albumen by heat, and as soon as cool flow with collodio-chloride. If dried spontaneously, pinholes would follow. He made many efforts to obtain negatives by this process from the positives so obtained, but could not succeed. The negative would be full of pinholes, and the positive would fade away and be destroyed.

Mr. Mason presented for inspection four samples of nitrate of silver. Three of them he had prepared, and pronounced absolutely pure; one was dried in a glass dish in the dark, and gave superb crystals; two were dried in the sun, and gave product of muddy dark crystals. Another sample of commercial nitrate was also dried in the sun, and gave crystals somewhat darkened, but far brighter and better than pure silver.

The difference was thought due to the trace of nitrate of potash in the commercial sample. It was thought by some that the two samples of pure which crystallized so dark was due to the fact of their having been treated in porcelain dishes, while the good sample was treated in glass.

Mr. Mason thought that the difference was not due to any such cause, but would repeat his experiments in glass, and report at the subsequent meeting.

Mr. Chapman exhibited twelve three-inch photographs of the sun, made between the 11th of March and the 14th of April, showing the so-called spot, which spot Mr. Chapman declares to be a hole of very respectable dimensions—to wit, 70,000 miles across its top, but how deep he did not know.

A committee to receive Dr. Vogel and give him welcome was appointed, and the proceedings terminated.

Amateur Photographic Association.

A council meeting of the above Society was held May 11th, at 12, York Place, Portman Square, the Right Hon. the Earl of Rosse in the chair.

The minutes of the last meeting having been read and confirmed, the following members and subscribers were elected:—R. Meade, Esq.; C. Cliff, Esq.; F. J. MacLaren, Esq.; Mrs. J. H. Lermitte; S. Davis, Esq.; T. Atkins, Esq.

The Secretary then laid before the Council the following prizes, which had been awarded at the previous meeting:—

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* Condensed from the *Philadelphia Photographer.*

A silver salver; five silver goblets; four silver-mounted claret jugs; three large albums, elegantly bound in morocco, with silver name-plates; two ditto, without name-plates; and five smaller ditto.

The certificates of honourable mention were then signed by the Chairman.

Mr. **Glaisher** reported that a vote of thanks had been passed by the Photographic Society to the Council of the Amateur Photographic Association, for the prize pictures which they had exhibited at their meeting.

Talk in the Studio.

Suppression of Vice.—At the recent 67th annual meeting of the supporters of this society, the secretary (Mr. Collette) read an abstract of the annual report, from which it appeared that during the last thirty years the society had not failed in a single prosecution. By means of photography large quantities of cartes were sent over the country, and, to evade the law, they were despatched by post; but recently a conviction was obtained against a well-known seller of these prints, it being proved that the prints were transmitted by him through the post. During the past year there had been eighteen prosecutions; all the parties were convicted, and at the present time twenty persons were suffering imprisonment for issuing obscene prints and books. Since 1854 there had been 134,760 obscene prints, pictures, and photographs seized. The agents of the society had gone through 150 towns in the country, and visited 1,200 shops this year, and in not a single shop in the back "slums" was an obscene publication or print to be seen.

Nile Pens.—We have before mentioned the excellence of the steel pens, "The Owl," "The Waverley," and the "Pickwick," introduced by Macuiven and Cameron. They have just introduced another novelty under the name of the "Nile Pen," suggestive, we presume, of its large capacity, giving it a large ink-holding power. We feel we do our readers a real service in mentioning this somewhat rare but very desirable adjunct to the writing desk—a good steel pen.

Josiah Mason.—We have received from Mr. H. Ponn, of Birmingham, a card and a cabinet portrait of Mr. Josiah Mason, the recent founder of an orphanage at Birmingham. Each picture is a noble portrait of a noble head. We have rarely seen finer technical photography.

To Correspondents.

Novus.—The reddish brown spots and markings are unquestionably due to greasy marks on the prints before toning, and are, apparently, the result of the paper having been handled with greasy or perspiring fingers at some period during the printing manipulations prior to toning. In some of those sent the texture of skin is traceable in the untoned portion. You may easily ascertain with certainty if you remove a stained print from the toning bath: you will find that the solution is repelled from the stained portion. 2. The cracking of the albumen surface is due to the use of very highly albuminized paper, and to permitting it to become very dry before it is manipulated. Where very highly albuminized paper is used it is desirable to avoid permitting it to get extremely dry, either before silvering, or after silvering, and during the various operations, or—and this most especially—after washing and before mounting.

Protosulphate.—The marking on the negative may be due to one of two causes: it may arise from the developer flowing unevenly, and being somewhat repelled from that part of the plate during its first flow; or it may arise from the use of an old bath with an accumulation of foreign matter in it. Not unfrequently those odd zigzag or curved markings of a transparent kind arise from the use of an old bath. In the latter case boiling, or sunning, or the use of permanganate of potash, will prove a remedy. 2. The dark portion at the bottom of the negative is caused apparently by pouring on the developer at that point with a little too much force. The markings at the top arise from the condition of the bath. You may remedy the defect somewhat by permitting the film to set well before immersing the plate, and by keeping it moving all the time it is in the bath.

Perseverance.—The opaque spots and comets of which you speak are probably due to turbidity in the collodion, and may be removed by allowing it to stand a few days, to settle perfectly. If this fail, the addition of half a grain of bromide of cadmium to each ounce of the collodion may probably prove a remedy.

P. L.—Methylated sprits are usually sufficiently strong for use in the manufacture of collodion. You may increase the strength, however, by agitating the spirit with dry carbonate of potash, and decanting the upper portion in the course of a few days, or, better still, distilling from the carbonate of potash. Several plans have been proposed for removing the methylic alcohol from the spirit, and one, that of Eschwege, was patented; but we have not tried any of them. We have made and used much collodion with methylated spirits, without discovering any injurious effect resulting from the methylic compound.

A Bengallee Mountaineer.—We gave the details as furnished by Col. Stuart Wortley, who, you will observe, carefully avoids stating a formula. He states that he keeps a pyrogallic solution and an iron solution ready for mixture in such proportions as the subject may demand. The large sized photographs produced instantaneously were, as we said, chiefly of cloud subjects. Our own experience in the use of the mixed developer is too limited to enable us to state the precise formula which will give the best results, but we may suggest that if, instead of mixing the solutions in equal proportions, you add a little of the pyrogallic solution to the iron, just sufficient to give it a slightly organic character, you will probably gain harmony and intensity without seriously increasing the exposure. Col. Stuart Wortley's iron developer with formic acid consists of protosulphate of iron, 11 grains; glacial acetic acid, 13 minims; formic acid, 10 minims; water, 1 ounce. From your description of the result, it seems probable that a decomposition had taken place as soon as the solutions were mixed, forming gallate of iron; and as this would not possess developing power, the developing solution would be weakened by just such proportion of the gallate as formed; hence you were working with a very weak developer. We will ascertain if Col. Stuart Wortley's experience affords any hints for your especial case. Have you tried shielding the sky and snowy mountains by a roughly torn mask of brown paper, either inside the camera or outside the lens? This plan, it is probable, would be found most efficient in securing a fair representation of the whole scene. See our American correspondence this week.

F. M. D.—The coarse chalky effect of the white hair is due to under-exposure and over-development. There is also too much top light. 2. The question of tone is a matter of taste, but we prefer warm tones at all times. Fair persons require warmer toned portraits to do them justice than persons of dark complexion.

F. S.—A toning bath containing one grain of chloride of gold in two ounces of water is very strong. It will work better if diluted with twice its bulk of water.

J. Burton.—There have been several patents for photo-lithography taken in this country, but we believe that in no case ha the patent been maintained. There are two processes by whicl excellent results in line may be obtained, and some in which moderate results in half-tone may be secured in subjects permitting a grain. The processes of Tessie du Motay and Albert are no photo-lithography proper, although they are in many respect analogous. There is no work in English devoted to the subject.

R. D.—The terms "imperishable," "indestructible," and simila words, when applied to enamel photographs, have not, of course, a absolute meaning. They are merely understood to imply that th images are imperishable. Of course it is possible to destroy th enamel tablet, and so destroy the picture. 2. We have no reaso to believe that there is any difference whatever in the durabilit of enamals produced by different methods. That of Geymet an Alker is similar to the method patented by Mr. Joubert.

W. M. Crouch.—A portrait lens may be used for architectur work, but it will require stopping down very considerabl 2. Successful portraits of children, dogs, &c., can only be secure under favourable conditions of light. There is no especial mod of securing success. All the chemicals should, of course, be i good condition, the light as good as possible, the developer stron and the lens as rapid as possible. You may have a lens con siderably more rapid than one with the focus and aperture y describe. Of course some operators have more skill and tact securing a prolonged sitting without a child moving than other but no rule can be laid down for securing this. 3. The imperfe tone of the example you enclose is chiefly due to the use of a wea negative. It is impossible to get a fine toned print from a b negative. The negative in this case appears to be flat and deficie in contrasts, and hence will not yield a brilliant or fine ton print. The paper, however, does not appear of good quality; it thin, and apparently soft and absorbent. A stouter, harder, a more highly albuminized paper would give more vigorous prin admitting of better tones. The print you enclose is somewb over-toned; but we have no reason to suppose that your toni formula is in fault. If you wish to try a change you will fi formulæ in our Year-Book. 4. The profile portrait enclosed not well lighted; there is too much top light, and the shado under the eyes, chin, &c., are consequently too black.

G. Hooper.—In our next.

Received, "The Principles and Practice of Photography. By Jal Hughes. Ninth Edition."

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE

Pinholes in Negatives.—New Remedies 265
A Pavilion Studio 265
Niepce de St. Victor 266
Collodion as a Varnish 267
Foreign Miscellanea 267
Echoes of the Month. By an Old Photographer 267
Critical Notices 269
Portraits and Pictures. By Johannes Grasshoff 270
Manipulations in Johnson's Carbon Process 272

PAGE

On a New Apparatus for Reducing Chloride of Silver. By A. Leibius, Ph.D 271
Correspondence.—McLachlan's Modification of the Wet Process—Pretsch and Photo-Galvanography 273
Proceedings of Societies.—Liverpool Amateur Photographic Association—Photographic Society of Marseilles 274
Talk in the Studio 275
To Correspondents 276
Photographs Registered 276

PINHOLES IN NEGATIVES.—NEW REMEDIES.

HE return of hot weather brings with it, amongst many dvantages to the photographer, some trifling worries, not he least of which is the frequent recurrence of pinholes in egatives. The usual causes and remedies are well-known, nd we need only refer to them in passing; but we have ne or two remedies to suggest to our readers which will, ve believe, be found very valuable in practice, but which ave not before been published.

The first remedy is a very simple and easy one. It onsists merely in reducing the proportion of sensitive alts in the collodion; or, to put the remedy in the simplest nd most practical form, in diluting the bromo-iodized ollodion with from one-eighth to one-fourth of its bulk of lain collodion. This is a remedy easily put into operation, and will be found efficient on occasions when, towards he close of a hot day, a crop of pinholes is suddenly leveloped in a bath up to that moment working well. We re indebted to Mr. Valentine Blanchard for the hint, who ssures us of its practical value. The second remedy onsists in keeping the plate in motion the whole of the ime that it is in the nitrate bath. This plan is valuable n preventing various streaks and markings, as well as in hecking the tendency to pinholes when present.

The facts being accepted, let us examine the causes in peration. When a film of iodized collodion is immersed n a bath of nitrate of silver a double decomposition is set up: a certain amount of silver combines with the iodine, and an exact equivalent of the metal which was in combination with the iodine (say cadmium) is set at liberty, and combines with the nitric acid which has been left with the silver. If this reaction were all, the only result would be gradual reduction of the strength of the silver bath, and an accumulation in it of nitrate of cadmium. But there are several other operations going forward. In the first place a solution of nitrate of silver is able to hold in solution a portion of the iodide of silver, and the bath has a tendency, therefore, to dissolve that formed in the collodion film, and it will continue to dissolve the iodide until it is quite saturated. If the matter ended there no trouble would arise; but various circumstances arise which convert the saturated solution into a supersaturated solution, ready to deposit the excess present in crystals whenever facilities arise. Iodide of silver is less soluble in a weak solution than in a strong solution of nitrate of silver, and as every plate slightly weakens the nitrate solution, its capacity for holding iodide of silver is reduced, and supersaturation follows. Iodide of silver is more soluble in cold than in warm solutions, and the nitrate solution which was just saturated at a temperature of 50° Fah. becomes supersaturated at a temperature of 60° or 70°. The accumulation of ether, alcohol, and nitric acid all tend to reduce the solvent power of the bath, and consequently to produce supersaturation.

When a solution is supersaturated with anything a very slight nucleus is sufficient to give rise to crystallization. If a plate coated with iodized collodion be left in a bath supersaturated with iodide of silver half an hour, a fine crop of circular crystals will be formed, which can readily be seen. If the plate be left in the bath the usual few minutes, these crystals commence their formation, and although they consist of the sensitive double salt iodo-nitrate of silver, and consequently receive impression by the action of light, yet, as they are dissolved in the fixing solution, a transparent pinhole or point without impression is found on the film wherever one of these minute crystals rested. The usual rules for preventing supersaturation in the bath, by keeping it strong enough, keeping it cool, and getting rid of excess of alcohol, are well-known, and the method of getting rid of excess of the iodide by diluting and filtering the bath is also known, and the principles upon which they are based are also known. In regard to the second of the new remedies the explanation appears to be as follows: when a collodionized plate is immersed in the bath and left still, the stratum of solution in immediate contact with it has its power of holding iodide of silver in solution rapidly reduced. Silver is abstracted from it by the iodine, which weakens the solution, and it becomes charged with ether and alcohol from the film, which still further reduces its solvent power on the iodide. The iodide of silver which had been held in the stratum solution in immediate contact with the plate is, therefore, at once precipitated upon the film in the fine crystals we have referred to. It is known to photographers that the equal diffusion of salts through a solution is not rapid unless it is assisted by agitation, and hence the immediate layer of solution next the plate may be weakened, and its iodide of silver precipitated, without the general equilibrium of the solution being as quickly restored. If the plate is, however, kept in agitation all the time it is in the bath, this cannot so readily occur, the stratum of solution next the plate is constantly changed, and, moreover, the tendency to crystallization on the plate is checked by the constant motion. The value of the remedy found in diluting with plain collodion probably depends on the greater capacity the film acquires to hold the whole of the iodide of silver formed, and by so doing tending less to charge the bath with the salt; the surface of such a film having also, possibly, less tendency to present nuclei for the formation of crystals.

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A PAVILION STUDIO.

AMATEUR photographers with a taste for portraiture are often somewhat in strait as to the best means of providing a substitute for the glass house of the professional portraitist. The erection of a glass house is not always convenient, and is necessarily somewhat costly, and hence many amateurs are debarred from the occasional practice of portraiture, or are driven to a variety of makeshifts, troublesome to use and inadequate to the production of good work. Portraiture in the open air, without any means of regulating the disposition of light and shade, is rarely satisfactory. By the aid of improvised canopies, screens, &c., sometimes moderately good effects may be secured; but in using these the success is rarely commensurate with the trouble, and hence it happens that amateurs having a taste for portraiture and for figure studies are often practically debarred from indulging their love for this department of the art.

Mr. Hart has just devised a very excellent substitute for a glass house, which he styles the "Amateur's Photographic Pavilion." It consists of a skeleton framework of iron in the form of a ridge-roof studio, fifteen feet long, eight feet wide, ten feet high at the ridge, and seven feet high at the eaves. This framework, which is japanned, and is screwed together, may be easily taken down and packed away in a comparatively small parcel. It is covered throughout with very strong canvas which will resist the weather and remain perfect, even if continually exposed for years. The covering to the back is one piece, properly stretched, and may very easily be converted into a background; but the remaining portion of the covering of sides and roof is hung to the framework on rings, and is divided at various points for convenience in working. It then becomes very easy to move the curtain with a rod provided for the purpose, so as to open any portion to let in light. Any portion of the roof or sides can thus be opened, whilst the rest is closed and excludes the light. The side curtains do not extend from the eaves to the ground, but only half way down, where they are attached to a rod which runs round the framework at about thirty inches from the ground, other curtains being attached to the same rod to cover in the lower part of the studio. Wherever the curtains are required to be kept in firm position they are provided with tapes to secure the canvas at that point. Great care has been taken, and ingenuity used, to secure the exclusion of light where it is not required, and to admit of dividing the curtains at such points as afford the best facility for good lighting in portraiture. As an old and skilful portraitist, Mr. Hart is practically familiar with all the exigencies of this department of photography.

Practically, this pavilion supplies a ridge-roof studio, well provided with easily worked blinds and curtains, but without any glass to exclude light or require cleaning, the pure light from the sky reaching the sitter without the intervention of any medium whatever. Although the studio stands quite firm, and is provided with stay-ropes to save it from any possible action of strong wind, it is very light and easily moved. With the help of a man at each corner, it may be easily lifted about into any position to secure a change in the direction of the light. Altogether, we are led to judge, from a personal examination, that this affords a really efficient and convenient substitute for a permanently built studio or glass house.

Apart from its photographic use, this pavilion seems to possess some good uses. We can readily understand that it forms a convenient garden arbour, cool and shady, very pleasant for study, rest, or refection in the open air, and in one case we heard that it had been found pleasant aid to domestic comfort in affording shelter to child's swing, and in serving as a summer dining-room.

NIEPCE DE ST. VICTOR.

Photographers generally will learn with regret that this gentleman, whose name has become a household word among photographers of all countries, as one of the most indefatigable and ingenious photographic investigators, has died in very straightened circumstances, his wife and two children being, indeed, totally unprovided for. M. Niepce de St. Victor was mainly, if not solely, dependent upon his official salary as commandant of the Louvre, and this, it appears, was almost nominal. His country and countrymen owe much to him, it is clear, for, besides his photographic researches, he was successful in the elaboration of several industrial inventions of some considerable value; but these he never patented, and therefore did not benefit from; he followed, in fact, the example of many philosophers, who occupy themselves simply with the investigation and working out of phenomena and facts they meet with, without caring in any way for the improvement of their own worldly position.

A committee of French photographers has been formed for the purpose of collecting a fund, if possible, for the benefit of M. Niepce's family, and the energy and determination with which the preliminary arrangements have been carried out seem to augur well for the success of the project. On the committee may be found the greatest names of those connected with the art in France: the Count d'Aguado, Adam-Salomon, Balard, Becquerel, Berthaud, Davanne, Dubosc, Ferrier, Girard, Lacan, Laulerie, Peligot, Regnault, Reutlinger, Soulier, Vidal, and many others. A circular has been drawn up by these gentlemen for distribution among photographers, a translation of which we place before our readers:—

"Photography has just sustained a grave loss by the death of M. Niepce de St. Victor.

"As nephew of Nicephore Niepce, the first inventor of photography, Niepce de St. Victor sustained worthily the name he bore, consecrating his life to the pursuit of photographic investigation and discovery.

"Among the numerous fruits of his labours to which we may refer are his efforts to fix natural colours, a task in which he was comparatively successful; his memoirs on the persistence of luminous activity; his processes of helio-engraving; and, above all, the obtaining of the first negatives upon glass, an invention which inaugurated a new era in photography, and prepared the way for the employment of collodion, the basis of present photography. Thus there is not a photographer, either in France or abroad, whether professional or amateur, who does not but feel, when performing the simple operation of coating a plate, that he owes some tribute to Niepce.

"This invention might have been a source of considerable advantage to its author if, less mindful of his private interest than of the progress of the art, he had not generously abandoned the discovery by means of which he might have become enriched. This disinterestedness has not, however, met with its reward, for Niepce is dead, leaving behind a widow, two children, and—absolutely nothing, for the emoluments attached to the appointment he filled barely sufficed for the wants of his family.

"In face of these good services rendered to photographers, and in face of this death and destitution, every one who derives profit or pleasure from the inventions of Niepce should feel that he has an obligation to discharge, a debt to pay; and feeling certain of finding in the hearts of all an echo of their own sentiments, the committee, formed on the death of Niepce, addresses itself with confidence to all interested in the art of photography, and urges them to contribute to the subscription which has been set on foot.

"We sincerely hope this appeal will be responded to, and that posterity will be unable to reproach our century as having treated with indifference the claims of a man who devoted twenty-five years of his existence to the working out of improvements which he presented gratuitously to the public, and whereby millions of money have been acquired; whose disinterestedness, in a word, if our efforts should be fruitless, will have brought forth but ingratitude and destitution.

"We address you, therefore, confident in the hope that you will aid us in the fulfilment of our task, and in repairing, to the best of our power, the misfortune which has befallen the family of Niepce.

"On behalf of the committee—Davanne, Darlot, Lacan, Fortier, Laulerie.

"Subscriptions may be forwarded to MM. Blacque and D'Eichtal, Bankers, 19, Rue de Grammont, or to the President of the French Photographic Society, 9, Rue Cadet, Paris."

COLLODION AS A VARNISH.

Mr. E. K. Hough, in our Philadelphia contemporary, recommends collodion as a varnish for negatives. He says that he first suggested alcoholic collodion in 1857 in Professor Seeley's journal, and adds:—"Mr. Seeley always claimed that my communication was prior to and the primary cause of all the subsequent discussions regarding the virtues and uses of alcoholic collodion, both here and in Europe. Be that as it may, I believe the discovery to be of more practical benefit and capable of more extended application than it has yet been; and my object in calling attention to it again is to suggest new experiments and uses in a different direction from what the idea has heretofore been carried.

"One is to assert that collodion is the best varnish for negatives—or, rather, is better than varnish—because it does not reduce intensity, and therefore does away with most of the re-developing. It cannot become sticky by heat of the sun. It is much easier to clean when that is desired, yet it has sufficient protective powers to preserve an ordinary negative with only one application, and that power may be increased by successive coatings.

"The mode of preparation is to wet the cotton with as small a quantity of alcohol as will do it thoroughly, then to accomplish the solution with the smallest possible quantity of ether that will destroy the structure of the cotton and reduce it to a pasty mass, then bring it to condition for use by adding four or five times its bulk of alcohol, and, when the negative is dry and cool, flow as usual. Care must be taken not to add too much alcohol, as it will flow clotted; and there must be enough, or it will partially dissolve the film. Of course the alcohol must be nearly or quite free from water, and the cotton must be of a quality that easily and completely dissolves. Its flowing qualities are impaired by use, but are easily restored by the addition of a few drops of ether.

"I do not find it difficult to manage, and believe it can be made very useful; and I offer the suggestion as some slight return for the benefit I have derived from your excellent and very useful journal."

Foreign Miscellanea.

Dr. H. Vogel left Berlin last month for New York, to be present at the Cleveland Exhibition. He has been invited over by a committee of the American Photographic Society, who have organised a fund for paying the worthy doctor's expenses. He proposes to remain in America for the space of three months, and promises to publish a detailed account of his visit.

The attempt to establish a photographic copyright in Prussia has, after very considerable exertions on the part of German photographers, fallen to the ground. It is anticipated, however, that next year a more successful result will attend exertions in the same direction.

Although the quantity of eggs employed in photography is very large, being estimated at four millions in Europe and one in America, these numbers are by no means considerable compared with the consumption of eggs as an article of food. On Good Friday alone it is stated that more than one million and a half of eggs were sold in Paris, and the number of hard-boiled or so-called red eggs annually consumed in the same city may be estimated at seventy millions. It will be seen, therefore, that the present high price of eggs is not in any way due to the photographers.

More books on the "Lichtdruck" and other mechanical printing processes are announced in Germany. The prices of all of them are very high, and some guarantee would, therefore, seem to be required that the authors are able to practise successfully what they preach.

Dr. Krippendorff is occupying himself with the preparation of collodio-chloride, and has communicated some interesting details in regard to its manufacture and employment to the Dresden Photographic Society.

A new instrument, termed a Helioscope, has been invented by a Captain Bühler, which is stated to be useful to photographers, as demonstrating the position of the sun at any fixed period of the day.

M. Borlinetto, of Padua, is engaged in the perfection of a process of printing in fatty ink, which is said to be progressing favourably.

An interesting paper on the construction of studios appears in *Licht*, from the pen of Dr. Stolze.

M. Krone, in *Helios*, writes an essay on dry-plate photography.

Dr. Van Monckhoven has communicated to the Vienna Society a paper "On Some New Combinations of Iodine and Bromine, Soluble in Alcohol and Ether." The communication bears important reference to the subject of collodion manufacture.

The *Moniteur de la Photographie* makes the following remarks upon the origin of cartes-de-visite:—"MM. E. Delessert and Aguado were certainly the originators of this style of portraiture. They were in the habit of sending one another small standing portraits representing themselves in various attitudes and in different costumes. We have still in our possession two of these early impressions; in the one, M. Delessert is ringing at the bell of a street door under shelter of his umbrella; and in the other, the Count Aguado is represented in *costume de voyage*, carpet-bag in hand, paying a P.P.C. visit. The idea, as one perceives, is very complete. M. Disderi was the first to introduce the cartes commercially."

In the coming autumn an exhibition will be held in British Guiana, in which photographic productions will find a place; and in May next a universal exhibition will take place at Lyons, of which Class 65 will be devoted to photographic apparatus and productions.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Matt Varnishes—Infringements of Copyright—Concave Backgrounds—Standard Sizes of Plates—Carbon Printing Licence—New Carbon Process—Carbon Eburneum Pictures—Paul Pretsch and Photo-Engraving—The Best Dry Process—Societies.

There is a fact which has come under my attention more than once lately in regard to some of the matt varnishes in the market. By matt varnishes I mean the varnishes which give a somewhat matt or dead surface to the negative, the object of which is to give a tooth to a black-lead pencil for retouching. Some of these varnishes contain ether; the matt surface is, in fact, due to the character of the solvent used for the gum resin, which is a mixture of ether and benzole. The presence of ether in a varnish intended for collodion pictures appears to be dangerous, and in several cases I have heard of the film being dissolved by the varnish, valuable negatives in some cases having been destroyed. In other cases I have heard that this kind of varnish has been applied to developed pictures on opal glass, for the double purpose of giving a surface suitable for the reception of water, and of protecting the metallic image from the action of mineral pigments. The suitable surface for colouring is easily obtained by this varnish; but as the ether seems to give the varnish a penetrating power, it sinks into the film instead of forming a resinous layer on its surface. As the varnish is very valuable for both the puposes for which it is employed, it seems a great pity that any risks should attend its use. There is, however, a simple remedy for both risks: it is only necessary to give the collodion film a wash of very dilute gum water after fixing and washing. The gum solution may be so weak that no apparent coating is left on the film, but it appears to envelope the particles of collodion sufficiently to protect the film afterwards from all risk of solution or permeation.

There is a curious subject for the consideration of the philosopher, found in the fact that certain forms of transgression of the law seem to possess a kind of fascination altogether apart from any possible pleasure or profit they bring. The pretended sailor who, with mysterious manner, beckons the passer-by into a quiet passage, and offers him sham bandanas and wretched cigars at double their real worth, depends for success in his roguery upon his statement that they are smuggled goods, and there is a charm in the idea of cheating the national revenue which induces many to fall into the trap. I suppose it is some such attraction which induces many men to continue the trade in photographic piracy. I was struck with this idea the other day in the Mansion House, when I saw an apparently intelligent, but—for the time, at least—a very unhappy looking man in the dock, charged with extensive piracy. It was stated in court that he had been summoned before, a year or two ago, but was warned and forgiven. But here he was again, charged both by Mr. Nottage and by Mr. Graves, and although these were the only cases gone into, I understood that several other photographic publishers had cases against him. He was fined thirty-five pounds, with an alternative of terms of imprisonment amounting to half a year. As a hawker of photographs his profits must be very large if this fine did not sweep away the gain of very much piracy, and the fact, incidentally mentioned in evidence, that his wife had recently been in the workhouse, does not afford suggestion that the trade of hawking piracies was a very profitable one.

The suspicion of those most deeply concerned is, that some very large producer of piracies is in the background, and that his capital pays the fines in many cases. Although little attempt is made to defend such cases on their merits, there is no lack of skilful advocacy in the defence, every available form of technical plea being urged against a conviction. Mr. Chipperfield, with much ingenious persistency, endeavoured to obtain admissions from Mr. Graves to show that in relation to some of the pictures, at least, the provisions of the Fine Arts Copyright Law had not been complied with; and he quoted Lord Overstone to the effect that copyright was a monopoly inimical to the interests of the public. But as it was tolerably clear that Mr. Graves had paid hard money for his copyrights, and that the infringers had no shadow of a claim to profit by the use of Mr. Graves's property, the worthy magistrate had no hesitation in inflicting the fines I have named, which one would fain hope would put a stop—for a time, at least—to this misuse of photography.

The idea of using concave backgrounds for portraiture is certainly not new as an idea, but I am not aware that it had ever been put into practical operation until Mr. Kurtz, of New York, devised and had made the hollow cone he is now using, and by which some of the very charming results which have been sent to this country have been produced. I remember that Mr. Rejlander contemplated the use of a curved background in his studio at Haverstock Hill, but I do not know whether he ever carried out the idea. Swinging screens have also been proposed as a means of varying the position of the background, in order to secure modified effects of light and shade thereon. But the idea of a background in the form of a cup or saucer, in which gradation of light and shade becomes inevitable, is, I fancy, new with Mr. Kurtz. The results are certainly very charming, and the idea is well worth the attention of portraitists.

If Dr. Liesegang's idea of a revision of the sizes of photographs, with a view to establish a universal standard or series of standards, be adopted, I hope that the proportions will receive careful consideration first. It will be somewhat difficult to secure a constant proportion between the length and the breadth of a picture. For instance, the present card size, in which the print is about 3¾ by 2½ inches, the height being just one-half more than the breadth, would scarcely answer for larger sizes. There is another difficulty which will require consideration: it will not always be easy to combine the greatest mechanical convenience with the best shape for pictorial effect. The proportions best suited for a full-length figure are not the best for a portrait of head and bust only, and in very few cases are the proportions proper in portraiture the most effective in landscape work. These questions will, however, doubtless receive attention.

Why is it that uncertainty seems to prevail in the public mind—or, rather, in the minds of professional photographic portraitists generally—as to the possibility of working the carbon process without paying a licence fee to the owners of the carbon patents? It has been repeatedly announced, I believe, that portraitists may work the process without any such payment. It is true that they will have to buy their tissue of the Autotype Company, who claim a patent in the transfer tissue as well as in the operations of transferring, but the material is so cheap that no barrier to its use can arise from this circumstance. I have recently seen some admirable work by Mr. Pritchard, of the Woolwich Arsenal, who, after the production of some thousands of prints, has arrived at the conclusion that carbon printing, with the present prices of material, is a little cheaper than silver printing.

The new carbon process of Mr. Window seems to be, in many respects, similar to that of Salmon and Garnier, which received a prize from the Duc de Luynes' Commission; but that there are essential practical differences, I judge from the fact that the process of the latter gentlemen was described in the report of that Commission as giving results similar to Mr. Pouncy's first process, which essentially failed in half-tone; whilst the prints I have seen by Mr. Window's process are very fine in half-tone.

Whilst referring to carbon printing, I may mention to those of your readers who may not have had an opportunity of seeing results, that the carbon Eburneum process, which owes its parentage to the joint effort of Mr. Cherrill and Mr. Burgess, are very charming pictures, which, I think, would be found to provide a taking novelty in portrait establishments, one not difficult to produce, and probably remunerative.

I learn that Paul Pretsch's claims are likely to be fully discussed at the next meeting of the Society, and am glad to learn that he is still alive. Mr. Dallas, who is probably the best informed on the subject, speaks with the bitterness of personal injury. He should remember, however, that they have one point in common, which should be in some degree a bond of sympathy: they have both spent much time, money, patience, and labour in prosecuting experiments in photo-engraving, for which they have received no adequate remuneration, whatever may be the amount of practical success which they have respectively achieved. And further, the public are left in doubt as to the exact merits of each of their modes of working, by the fact that they both carefully kept the details secret. I am not blaming them for this, but merely noting the points of coincidence in their position. Again, is it a fact—for it is freely whispered as such—that they both have described plates as "untouched by the *graver*," which have been worked upon by roulette, scraper, or other instrument?

his is a point upon which Mr. Dallas can give useful formation.

The old enquiry so frequently made, so unsatisfactorily nswered — Which is the best dry process? — elicited me practical information at the last meeting of the hotographic Society. Besides describing the special ıalities of three processes, all capable of yielding excellent ctures, as the examples he exhibited satisfactorily showed, r. England also afforded a clue to the discrepancy in the perience of himself and Mr. Gordon as to the keeping ıalities of gum gallic plates. For the purpose of ease in e manipulation, and avoiding some tendency to stains in e plates, Mr. England had considerably modified the rmula published by Mr. Gordon, using a very dilute gum-llic solution. With plates so treated he obtained excelnt negatives when the exposure took place within a week two of the preparation, but if the plates were kept nger they were less sensitive, and the results not so good. r. Gordon, on the other hand, had kept the plates for onths without perceiving the slightest deterioration. As th these gentlemen are admirable manipulators, both of em careful and trustworthy in an unusual degree, it was little puzzling to find such discrepancy of experience. hen, however, Mr. England's use of diluted solutions as made known, a clue was furnished to the enigma r. Gordon stated that the stronger solution was necessary secure keeping conditions, and that, with a weaker prervative, good keeping plates could not be hoped for. esides the gum-gallic, coffee, and albumen processes, for e excellence of which Mr. England stood sponser, the vel combination which Mr. Gordon described, and the alogous one which Mr. England mentioned, seem prosing. It is worth note how prolific many of the suggesons of Mr. Bartholomew have been. At one time he oposed an alkaline dry process, and it was reproduced ars afterwards, with much circumstance, as a novelty hich is likely to revolutionize photographic practice. He oposed the use of a salt of morphia in dry plates, and its e keeps turning up successfully in various forms, and it w promises, in conjunction with albumen, to give us e of the best dry processes yet proposed.

As regards the societies generally, holiday time is at nd, when the members will doubtless collect experience r discussion next session.

Critical Notices.

HE PRINCIPLES AND PRACTICE OF PHOTOGRAPHY. By Jabez Hughes. Ninth Edition, Carefully Revised. (London: 379, Oxford Street.)

Ninth Edition, carefully revised." These are the salient ords on the comprehensive title-page of the pamphlet— might more properly say volume—before us. The fact at nine editions have been demanded in something like ne years affords satisfactory evidence of the excellence the work; but it does something still more important: affords facility for maintaining a progressive excellence revision and addition, a point of the utmost importance the student's manual of a progressive art.

Much of the present edition has, we understand, been -written, and there are various valuable additions made the work, both in the shape of additional hints on old ocesses, and detailed instruction for the practice of new ocesses. We have, for instance, a chapter on the prouction of Sarony's photo-crayons; another on the prouction of "Photo-diaphanotypes;" another, the "Ivory-pe," and so on. Of the clear, familiar, and lucid style the book, we may give an example in the following valule chapter:—

> THE "EQUIVALENT" FOCUS OF A LENS.
>
> A term has been used in the preceding article which it is imrtant should be thoroughly understood—the "equivalent" focal length of a lens. The power of a lens is determined by its diameter and its focus. The diameter of a lens determines the amount of light it will admit; the length of its focus determines the size of the image it will produce. A short focus lens produces a small image, without any reference whatever to its diameter. A long focus lens, also without regard to its size or diameter, produces a large image. The size of image, then, that any lens will produce is entirely governed by the length of its focus. But we always speak of the optical instrument we use as being a "lens," whereas it is made up of several lenses. Every individual lens, according to its form, has a definite focus; but when several are united, the focus of the instrument is a compromise of the focal lengths of all the lenses in the compound, each one modifying the other. This compound focus is called the "equivalent" focus of the instrument, because it produces an image of an object, at a definite distance, of the same size that a single lens of the same focal length would do at the same distance. Hence the compound focus is equal to, or equivalent with, a single lens of that focus. It might have been called the "general" focus, or the "combined" focus, or the "absolute" focus; but when its meaning is understood, the word "equivalent" is better, as it is more exact. The length of focus, then, of a photographic optical instrument is determined by, not the diameter of the glass, not the number of the lenses that may be united in the combination, but by the size of the image that the instrument will produce. A familiar example may perhaps aid in making this subject clearer than a general statement. One of the simplest lenses that can be employed is a common reading or magnifying glass. Take such a glass, and by the aid of sunshine produce the brightest and most concentrated point of light, say on white paper, using the lens as a burning glass. Measure the distance from the glass to the paper, and that is the focus of the lens. Let us suppose it to be six inches; that is, the focal length of that lens, and, for all practical purposes, it will serve as the standard to judge the focal length of the other lenses. Let the reading-glass be now mounted so as to be used in a photographic camera, and let it be placed at such a distance from a man six feet high as to produce an image on the ground glass of (say) two inches. Now replace the reading-glass by an ordinary photographic portrait combination, so that the slot of the central diaphragms corresponds with the place of the reading-glass, the man and the camera remaining undisturbed. The image given now on the ground glass will be either the same size (two inches), or it will be greater or less. If the image is the same size, then its equivalent focal length will be six inches, because it produces an image equal in size to a simple single lens. If the image is smaller, then its equivalent focal length is shorter than the single lens—that is, it is less than six inches. If the image be larger than two inches, the equivalent is longer; and the difference in size will proportionally determine the difference of the equivalent lengths of focus. If the portrait combination give an image of four inches, then its equivalent is twice that of the reading-glass—that is, it is twelve inches equivalent focus. If it give an image, however, of only one inch, then its equivalent focus is only one-half of the reading-glass—that is, three inches. This illustration will make clear what is meant by the term, and what is the value of the term, "equivalent" focus. When the equivalent focus of a lens is wished to be determined, a much simpler method can be given, which is sufficiently accurate for practical use. Place an object, say three inches in diameter, before the lens; adjust the camera and lens so that the image of the object is of exactly the same size—three inches. Remove the lens and measure the distance from the object to the ground glass of the camera. One-fourth of this distance will be the equivalent length of the focus of the lens. If the distance were two feet, then six inches is the equivalent focus of the lens.

Here is another extract, which strikingly illustrates the bitter enmity Mr. Hughes entertains for dirt:—

> There is no one thing in particular that I so strongly advise, as a preventive of failures in photography, as scrupulous cleanliness. Everything used should be clean. Clean negatives can only be obtained on clean glasses. Dirt causes smears, stains, streaks, comets, and fog. It is not only necessary to have the collodioned side of the glass clean, but also the other side, otherwise dirt is carried into the nitrate bath, and will put it out of order. Dirty dark slides cause dirty corners of negatives; dirty cameras permit dusty spots on the negative film; dusty lenses give dim definition and require longer exposure; dirty developing glasses cause muddy precipitates; dirty filter papers contaminate the solutions that pass through them; and dirty bottles and measure glasses spoil the materials they contain. But the worst description of dirt is dirty hands. No matter how clean or pure things are, dirty hands can spoil everything. They are constantly ready to communicate their infection. Some men's hands are always dirty from heat and perspiration, and many are so from carelessness and indolence. Dirty, sweaty hands are constant sources of photographic trouble, for they more or less contaminate everything they come in contact with.

> Dirt is happily described as "matter in the wrong place;" dirt must, therefore, be hostile to successful photography, which consists in having matter in the right place. For practical purposes, I may describe dirt as mechanical and chemical: mechanical dirt is that which adheres to the surface of objects from atmospheric action, or from imperfect washing, or dirty water; chemical dirt consists in the remains left on glass, in bottles, and in measure glasses, of former materials employed, and which decompose and alter the nature of the fresh materials used afterwards.
>
> Inferior photographers, as a rule, are dirty and slovenly in all their manipulations and arrangements; some good operators are dirty and careless, but their success arises from their general ability, to which their slovenliness is a decided drawback. Most successful photographers are, however, in all essential particulars, scrupulously clean.
>
> I dwell on this value of cleanliness because I know by attention to it you will avoid so many causes of failure. Besides, what is the use of my giving advice how to extricate yourself from your troubles if you carry at your finger-ends the constant means of creating new ones?

In a chapter of aphoristic general hints, he returns to the same theme:—

> Use plenty of water everywhere; hypo left in your negatives will cause them to crack; hypo left in your prints will cause them to fade.
>
> Wash your plates well; wash your negatives well; wash your prints well; and wash yourself well.
>
> Ventilation is the soul of health. Ventilate your dark room; ventilate your bath, your camera, your tent, and your ideas.
>
> Read, mark, learn, and inwardly digest the experience of others as exhibited in the photographic journals.

For the beginner, this is at once the simplest and most lucid elementary manual we know, whilst its comprehensiveness, both in relation to standard processes and recent improvements, gives it great value as a text-book for the advanced student.

PHOTOGRAPHIE AU CHARBON. Deuxieme Partie. Par Leon Vidal. (Paris: Alfred Vibien, Rue de Seine.)

This second part of M. Vidal's work on carbon printing is devoted to a detailed record of such improvements as have been made since the publication of his first volume. Two chapters are devoted to the improvements devised by Mr. Johnson; a chapter to enlargements direct on paper; one to the photometer; one to the production of negatives in carbon; and a final chapter to general considerations. M. Vidal, who is, as our readers know, secretary to the Marseilles Photographic Society, has for years been an earnest student of carbon processes and a skilful experimentalist therein, and he has, in this volume, made a valuable contribution to its literature, for which French photographers are greatly indebted to him.

NOTES ON PHOTOGRAPHS OF SOUTHERN INDIA. By Capt. Lyon. Edited by James Fergusson, F.R.S. (London: Marion & Co.)

Those of our readers who have seen Capt. Lyons' very admirable photographs of the ancient architecture of Southern India will be glad to obtain his descriptive notes of these monuments of the past religious history of India. Although brief and terse, they are full of interest, and give especial value to the photographs. The pamphlet is issued gratis to purchasers of a series of ten of the pictures.

THE FAMILY FRIEND. (London: Partridge and Co.)

This is an exceedingly interesting domestic magazine, with a profusion of capital engravings, which possess, to our readers, the special interest of being from photographs by Rejlander, the Stereoscopic Company, and others.

PORTRAITS AND PICTURES.

BY JOHANNES GRASSHOFF.*

Every portrait photographer has, at one time or another, received complaints from young (?) lady customers to the effect that, although they have been frequently photographed, they have never, in any instance, been justly dealt with. These expressions of dissatisfaction are to be heard from ladies sometimes whom one might almost term pretty, and, on this account, such reproaches cannot be regarded as altogether without foundation. In what way do we, then, account for such occurrences, and to what causes must we ascribe them?

I have given the subject my careful consideration, and I may say that if, within the last year and a-half, five instances of the kind have come under my notice, in all of them the fair photographées have desired to appear at least ten years too young in their portraits; while, perhaps, my utmost endeavours in this direction, at dodging, and touching-up, have been powerless to take off the effect of more than four or five winters' depredations, and this was deemed by my lady customers as quite insufficient. One instance, of a *bonâ fide* nature, I indeed remember, in which considerable trouble was taken to secure the portrait of a lady possessed of some personal attractions, but of a somewhat vivacious nature. In this case the life and vivacity which imparted to the face its beauty were absent in the photograph, and the result was a very so-so picture indeed.

Another similar instance occurred in my experience a few months back. A young and rather good-looking maiden was my model for eight or nine pictures, but although the whole number were exceedingly successful regarded in the light of photographs or studies, they none of them represented the sitter in her true aspect. Some were taken in deep shadow, others in bright sunshine, but none were true to nature; they all exhibited a *blasé* air about the mouth, very characteristic, but not remarkable, in the original face.

When an artist paints a portrait, he paints, at the same time, a picture—that is to say, he covers up or softens any ugly points, and, with a skilful and masterly hand, beautifies the markings and lines of the features. The vivacity and fire in the countenance and eyes are secured by a careful study of the model under different aspects and humours, and cunningly reproduced upon canvas with more or less success, according to the talent of the artist.

Our apparatus and chemicals are not so plastic as the artist's brush. Unfortunately, the art of photography is incapable of rendering those pleasing, though often momentary, expressions which pass over the face, and which, while we contemplate them, are gone. Besides this, again, the shadows we see upon our models are brown, and not black. Our apparatus copies with fidelity the intensity of the shadows, but fails to reproduce their colour or tint, producing grey or brownish-grey tones, or even dark black, where, in nature, the latter is altogether absent—as, for instance, in the line under the eye-lid and under the nose. How often is a portrait spoilt by these defects alone! While a photographer is sometimes enthusiastically delighted with his work, a painter will shrug his shoulders, and intimate that, however much of a picture the same may be, as a portrait it leaves much to be desired.

The camera—or photographic eye—looks upon objects in a different manner to what men and painters do. If we had more time for our work, and the sensitive plate would allow of an interval, of perhaps an hour, to pose, adjust, and study our model, as a painter would do, our photographic handiwork (if it cannot be called art) would be easier to follow. But, instead of this, five minutes is about the period at our disposal for offering up a victim upon the altar of photography, and this interval, when groups have to be posed, is indeed short. However, it is certainly a matter of necessity that our photographs now-a-days shall be artistic pictures, for mechanical portraiture, as it may be termed, has come to an end.

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* *Photographische Mittheilungen.*

I know very well that in practice there are many difficulties to contend against, and that the public is indeed a many-headed monster. Take, for example, the amount of persuasion required to induce a gentleman to have a bust portrait instead of one full length, which he has set his heart upon having on account of his new-fashioned coat, which, by the way, reaches half-way down his back only, and exposes to uninterrupted view his scissor-like legs. In such an instance it is indeed difficult to secure a picture at the same time as the portrait.

What is it that we admire so much in the Adam-Salomon pictures? It is not alone that indescribable something which compels the observer to glance at once at the head of the portrait that constitutes the great art of this master, but it is because Salomon understands the art of posing, one of the most difficult accomplishments connected with portrait photography. His method of lighting I will leave out of the question altogether. Salomon produces all his pictures, moreover, of one description; and this is another important point, for, in my opinion, there is nothing so injurious to photographers as to prepare portraits of all kinds and sorts. If I could possibly do so, I would follow the example of this great French master, and execute pictures of only one class and style, in the same manner as a painter exercises his calling in only one or two branches of the art. Among English photographers such men are to be found, but, unfortunately, we in Germany prefer following the profession of a Jack-of-all-trades.

How difficult it is to accord to each face its most suitable and characteristic mode of lighting, and how often does it happen, after one has taken the greatest possible pains, and has arranged everything to one's complete satisfaction, to find the portrait out of focus, double, and blurred! Only very recently I had a model who demonstrated to me in the most unmistakeable manner the difference between a portrait and a picture—that is to say, the fact that a photograph may be a perfect success from an artistic and technical point of view, and yet be absolutely unlike the original. The case in question was that of a young lady who came with an introduction from a friend, and who was desirous of having one of those large carte-de-visite heads taken, such as are just now fashionable. She showed me various portraits of herself taken by different photographers, and complained—not without reason—that the pictures were very unlike her. My first plate, a double negative, was, of course, but a trial, and the pictures were unfavourable portraits, although very good photographs. By observing the model in various positions and in different aspects and lights, I saw at once that something might be done with the pretty face of my sitter, and as I was not in any way pressed for time, I forthwith secured a series of pictures under different conditions. In all, sixteen successful pictures were taken, but of these but very few could be considered portraits. The pictures were taken on various days, and the drapery and toilet of the model different in nearly all cases, the result being that in several of the photographs the lady herself was scarcely recognisable. In fact, I found that the latter was endowed with really chamelion-like qualities, and her looks altered with the momentary expression of her face. The difficulty was, therefore, while quickly securing a certain expression, to have the pose and lighting in keeping with the particular phase of countenance which at that moment had been called up.

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ON A NEW APPARATUS FOR REDUCING CHLORIDE OF SILVER.*

BY A. LEIBIUS, PH.D.,

Assayer to the Sydney Branch of the Royal Mint.

In the refinage of gold bullion by Miller's new chlorine process, the silver contained in the alloy thus treated is eliminated from the latter in the state of argentic chloride which, by a subsequent process, is reduced to metallic silver.

This reduction has always been effected in the usual manner, viz., by placing the slabs of fused argentic chloride between plates of wrought-iron or zinc, with the addition of acidulated water. Although a perfect reduction to metallic silver has always been achieved, yet it required a considerable amount of time and manipulation, since the thick slabs of fused argentic chloride were, after two or three days, only partially converted into metallic silver, and had to be re-arranged in order to expedite their complete reduction. Such manipulations, however, were not only found to be very objectionable on account of the time they required, but more so on account of the very disagreeable work which they caused to the operator. The reduced spongy silver was broken up, by hand, into small pieces, in order to ascertain its complete reduction, and was then boiled in acidulated water to free it from iron or zinc.

It remained, therefore, a desideratum to effect the reduction of the fused masses of argentic chloride in a manner which would, at the same time, be quicker in its execution, and also obviate the just-alluded-to manipulations.

In 1868, Messrs. De la Rue and Hugo Muller, in London, constructed a galvanic battery, one pole of which consisted of fused argentic chloride the thickness of a goose quill, the other pole of cylinders of zinc. Adopting this principle, I have endeavoured to construct an apparatus which should fulfil the requirements before referred to.

After operating successfully with a small model which allows the reduction of about 250 ounces of argentic chloride in one operation, I have, with slight modifications, constructed an apparatus which will reduce from 1,400 to 1,500 ounces of argentic chloride in twenty-four hours. The apparatus and its dimensions are as follows:—

Two thick boards, 15 inches long, are joined together on both ends by three strong battens, so as to form an open box without a bottom, 13 inches long by 14 inches wide, and 15 inches high (inside measurement.) The two boards forming the length of the box or frame contain seven vertical grooves, ½ inch wide and ½ inch deep, at intervals of 1½ inches from each other. These grooves are cut down to a length of 12 inches, leaving 3 inches of each board forming the legs of the frame.

At the termination of these grooves passes horizontally a narrow slit, ½ inch deep, and along the whole length of each board, into which a strip of metallic silver, ½ inch wide and the thickness of about a threepenny-piece, is tighly fixed, projecting on one side of the frame about 18 inches beyond each board.

The seven grooves already alluded to are for holding zinc plates, ½ inch thick, 14 inches long, and 12 inches high, which rest on both sides on the strips of silver, which, as just described, are jammed horizontally into the sides of the two boards. A connection is thus established between the seven zinc plates and these strips of silver.

The second part of the apparatus consists of a wooden frame, cut out of a solid board 1 inch thick, and supplied with two large iron handles. This frame is the same length as the box holding the zinc plates, but 3 inches narrower. It contains on each side, parallel to the direction of the zinc plates, twelve slits ½ inch long, which hold silver bands ½ inch broad and the thickness of a threepenny-piece. These silver bands are passed through the slits in the board, so as to form on each side of it six loops, 11½ inches in length and ⅞ inch wide. The six loops on one side are exactly opposite to those on the other side of the board, at a distance of about 9 inches. They are intended to hold the slabs of argentic chloride, which are 12 inches long, 10 inches high, and about ¾ inch thick, and are put through these loops lengthwise, projecting on each end about 1 inch beyond the silver bands.

The whole frame holds, as before stated, six of these slabs of argentic chloride, which are placed between the six spaces formed by the seven zinc plates, from which latter they are about ¼ inch apart on each side.

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* Read before the Royal Society of Victoria.

The projecting horizontal strips of silver jammed into the sides of the lower frame are then connected with the ends of the silver forming the loops in which the argentic chloride is suspended; and the whole apparatus thus charged is placed in a tub filled with water. After a short time galvanic action is discernible; the liquid gets gradually warmer, and a strong galvanic current is observed. After about twenty-four hours the action has nearly ceased, and the whole argentic chloride is found to be completely reduced to metallic silver, which retains in the silver loops the same shape, and, outwardly, also nearly the same appearance as when first introduced as argentic chloride. The latter contains always more or less chloride of copper (eliminated together with the silver during the operation of refinage by chlorine), which is reduced together with the chloride of silver; in fact, this soluble chloride of copper helps to act as an exciting liquor for the battery. In the first experiments, a weak solution of salt (chloride of sodium) was used as exciting liquor; but it was found that this could be dispensed with, and only common water used (the action, however, is, in this case, a little retarded, and does not become powerful until about two hours after the battery is set). By using a part of the resulting liquor from a previous reduction of argentic chloride, and which contains chloride of zinc, it has been found that the galvanic action sets in very rapidly, and accelerates thereby the completion of the reduction.

No acid is used, and therefore the amount of zinc used in each reduction has invariably been found to be almost the theoretical quantity required to combine the chlorine of the argentic chloride treated with the metallic zinc, in order to form chloride of zinc.

The quantity of metallic zinc thus used was always from 24 to 25 per cent. of the weight of the argentic chloride reduced.

The reduced silver is boiled out in acidulated water, in order to remove the basic and oxy-chlorides, and finally in pure water, while still suspended in the silver loops. As soon as it is taken off the last boiling it is immediately ready for the melting-pot, since the heat from the boiling water dries the porous mass of silver sufficiently to allow of its immediate melting. The seven zinc plates, when first used, weigh about 140 lbs. avoirdupois; the six slabs of argentic chloride, of the dimensions already given, weigh about 1,400 ounces troy.

The zinc plates are used over again until too thin for that purpose, when they are re-melted and cast into new plates. It has been found that the quantity of zinc used is little, if at all, increased by prolonging the time of connection with the silver plates after the reduction is completed; the whole apparatus, when once set in operation, can therefore be left to itself until it is found convenient to melt the reduced silver.

While this apparatus reduces the argentic chloride much quicker than if the latter is simply placed in contact with zinc or iron plates, it obviates any handling of the argentic chloride from the time the latter has been placed in the silver loops until the reduced silver is ready for the melting-pot, advantages which have been fully appreciated by those who formerly had to resort to tedious and disagreeable manipulations.—*Chemical News.*

MANIPULATIONS IN JOHNSON'S CARBON PROCESS.*

III.—Non-Inverted Pictures on other Opaque Surfaces than Paper.

22. *The "Eburneum" Autotype Process.*—If, instead of the plate paper or enamel papers prepared as just described, a more perfect imitation of ivory or porcelain be desired, any compound imitating these substances may be poured upon the back of the print while mounted upon the temporary supporting plate, as Mr. Johnson has shown in the specification of his patent deposited January 3rd, 1870. Minute directions for doing this have been given by Mr. Nelson K. Cherrill in the Year-Book of Photography, 1870, but these will be found already embodied in this treatise up to the point at which the "Eburneum" compound should be poured on. Contrary to Mr. Cherrill, we recommend that the print, developed upon the collodionized plate, should become quite dry, and should be again wetted for a moment in warm water, before the gelatine compound is poured on, for unless the gelatine has become contracted to its ultimate dimensions before the transfer material be applied, there is always some loss of the crispness of the original definition. If the drying has once taken place, the picture may be wetted again with impunity, if not too long soaked in water, as the re-absorption takes place slowly, and the swelling of the film never reaches the original gelatinous condition of the undried print. Even a moderate degree of wetting gives sufficient "tooth" for the perfect adherence of the transfer compound.

The following formula has been given as Mr. Burgess's compound for the transfer of his charming pictures, viz.:—

French gelatine (pure white) ...	5 ounces
Water	20 ,,
Glycerine...	½ ounce
Oxide of zinc	1 ,,

In a mortar rub up the oxide with the glycerine, add them to the gelatine solution, and well mix the ingredients. Allow the mixture to stand in a warm place, so as to be kept from chilling. After six or eight hours' subsidence, the pan of mixture may be removed to a cool place, and allowed to set. When solid, the whole is to be turned out of the pot, when a lower stratum of the compound, containing the coarser particles, must be removed, the top portion only constituting the imitation ivory for transferring the print. This, warmed so as to flow freely, must be poured upon the print, and plate placed upon a levelling-stand. About two ounces for a plate six and a-half by eight and a-half is sufficient; this will give a thickness of about one-eighth of an inch, which will eventually shrink to that of a stout card. When the compound is well set, it is removed to a drying box or stove, in which a warm current of air is induced by gas burner, placed below an aperture cut in the bottom of the box. This latter has also apertures in its top, to allow of the free passage of the warm air. From twenty-four to thirty-six hours are usually required for the perfect desiccation of the compound. When this is effected, the back of the dry gelatinous film is varnished with collodion, and the plate again returned to the drying-box. When the whole is dry, the compound film is removed by the insertion of a penknife between the stratum of collodion and the glass, and the removed picture is trimmed to the required dimensions.

23. *The "Tablet" Autotype Process.*—A very pleasing picture tablet is made by pouring plaster of Paris, or White's cement, upon a carbon print mounted upon its temporary supporting plate, either polished or matt, particularly the former. The tablet, so formed, sets in a few minutes, and the picture comes away with it, with the face polished or matt, according to the nature of the support employed. The tablet is then immersed in a warm solution of wax, or paraffin, or benzole, when it becomes quite insensible to moisture or other atmospheric influence, and has all the appearance, and almost the indestructibility, of a picture in ceramic ware.

IV.—Non-Inverted Pictures on a Transparent Surface, to be Viewed by Reflected or Transmitted Light.

Carbon prints of this class are by far the most easy to produce, and they are undoubtedly the most perfect and pleasing, inasmuch as they are obtained upon the surface upon which they are to remain, glass or talc. These substances far transcend paper in the perfection of their surface, and consequently the definition of the picture is more pure and perfect.

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* Continued from p. 260.

The general objection which we have urged as to the reversal of pictures, when developed on the support upon which they are to remain, does not apply to the case in which that support is transparent, as in the case of glass or talc, when the picture, being viewed through the support, becomes corrected, and is seen in its proper position.

24. *Carbon Prints on Glass or Talc.*—All the directions given up to the preparation of the temporary support (11) are applicable to the present case; but here no preparation is necessary. The object of the fatty film on the temporary support is to prevent the final adhesion of the film to that support. Here our object is the reverse, and the adhesion cannot be made too complete. For this purpose the glass must be chemically clean, which is best effected by the use of nitric acid, or of caustic alkalis.

Instead of the care thus requisite to obtain a chemically clean surface, we can have recourse to collodion, but the collodion must not be allowed to dry, but must be plunged into water before it sets.

Upon the glass thus cleansed the exposed tissue is laid exactly, and with care as already described (12). The applied pigment paper is developed in the same manner (13), and is allowed to dry, when it is ready to be mounted, either as a print to be viewed by reflected light, or as a transparency. In the latter case, however, a pigment paper of great density is required in order to obtain vigour, and such a material will be prepared by the Autotype Company.

If the picture is intended to be viewed by reflected light, it is simply backed with a piece of transfer paper, which is soaked in warm water and then laid upon the dry picture, as the wetted pigment paper was mounted upon its temporary support, all air being removed by the same mode of operation. By this means the enamel surface of the transfer paper is brought into optical contact with the glass, causing the vigour, brilliancy, and transparency of the picture to be greatly enhanced. Or plaster may be poured upon the back of the print, thus producing a sort of tile, embodying a pure carbon, and therefore indestructible, picture within its substance, as in the last case, but with an adherent glass face. The picture may be worked upon behind to any extent before the white backing is applied. If the high lights be nicely touched with Chinese white, a grey or tinted backing may be applied, giving a most beautiful picture in the *deux crayons* style. Or the picture may be tinted with oil, or with powder colour before being backed; but this requires a special pigment paper.

If the picture be intended as a transparency for the stereoscope or magic lantern, it should be varnished, and then should have a piece of ground glass placed behind it, fixed by paper pasted round the edges. A better plan, however, is to coat the back-plate with Canada balsam, and to apply it, while warm, to the back of the film, which thus is hermetically sealed between the two glasses.

Instead of ground glass a clear glass plate may be substited, providing the Canada balsam be thinned with turpentine and a small quantity of white pigment ground in oil, by which means any degree of semi-transparency may be obtained, from that of ground glass to that of porcelain. Or pure white wax, with a slight degree of opacity given by a ground white pigment, may be used instead of the Canada balsam.

By whatever medium the back-plate be applied, it should be secured to the front plate carrying the film by cemented strips of paper, to maintain the two plates in their due relative position, and to diminish the chances of breakage when inserted into the optical instrument in which the plate is to be viewed. Pictures ot a larger size, mounted with back-plates, and inserted in slight metal frames with rings for suspending them, form charming objects for the window; or, when mounted in small standing frames, for the drawing-room table. It is believed that these styles of prints will be peculiarly appreciated by amateurs, who may produce them from their own negatives by a few moments' labour, and at little cost.

V.—Inverted Pictures on Opal Glass, Porcelain, Ivory, Wood-Panel, etc.

The carbon or pigment film may be developed directly upon all these and similar surfaces.

The manipulations are identical with those before described, and if the rough or ground surface of the opal glass be used, no precaution need be taken for adhesion; but in the case of pot-opal with polished surface a stratum of collodion will be found to greatly diminish the trouble of cleaning the plate.

Any impermeable substance—such as varnished wood, card, &c.—may be used instead of the opal plate. These, however, are stained yellow by the action of the bichromate upon the salts of lead, zinc, &c., employed, and therefore such salts should be avoided in their preparation

Ivory is liable to the same defect by reason of the lime, which enters into its composition, combining with the chromic acid of the bichromate. This may be remedied by adding ammonia to the water in which the pigment paper is immersed previously to being mounted upon the ivory support.

(To be continued.)

Correspondence.

McLACHLAN'S MODIFICATION OF THE WET PROCESS.

Sir,—It is now nearly two years since Mr. McLachlan, of Manchester, came to London expressly to lay before the Photographic Society of London his experiences with a new method of making a nitrate of silver bath for negatives, for which he advocated those much desired qualities, namely, uniformity of excellence, with a total freedom of any tendency to fog; the impossibility of pinholes; and considerable economy through its continuing to remain in this perfect condition to the very last. That is to say: Mr. McLachlan professed, with an alkaline bath and collodion, to produce negatives free from stains, streaks, and fog; also to get rid of the much dreaded pinhole difficulty, by using a bath that could not possibly hold iodide of silver in solution.

Now, I need not enter into the details of the process necessary to prepare the silver, as it will be remembered it was by prolonged sunning. The meeting at which the subject was brought forward was very numerously attended, and several gentlemen took an active part in debating the question; many questions were put to Mr. McLachlan and answered, and although the Society did not endorse all his premises and theories, yet it seemed admitted that Mr. McLachlan, who has been for years a hard-working and successful portraitist, has produced a very good class of work, of very uniform excellence, and that from one bath he has used an enormous number of plates, and that in rapid succession.

Let me here ask my professional brethren how many days during the hot summer an acid bath will remain in good working order if an average of (say) forty plates per day are immersed; or even suppose the bath to be used only every other day, how long would it remain in perfect working order? If I speak from my own experience, I should say a month would not pass without its requiring some doctoring, of course allowing that its strength has been kept up during the meantime by adding from a strong solution: now adding nitric acid, drop by drop; then, when disordered, making it slightly alkaline; and then boiling it down, or else sunning it for days. All this is a good deal of trouble, and sometimes comes oftener than agreeable. Can this be avoided? Mr. McLachlan declares it can; and that brings me to the question I desire to put to my brother portraitists, namely, how many have given Mr. McLachlan's method a fair trial? I must myself plead guilty of neglect, and confess I have not carried out my intentions to give it a fair trial; but as the sunny season is once again approaching, I considered it due time to call the attention of photographers to this question. I am aware some almost ignore the fact of the possibility of imperfect baths if the well-known treatment is observed; but I would humbly submit that amateur photographers, who only use their baths occasionally, and then only for a few plates, know nothing of the troubles of the professional man who works it all day long and in all weathers. Some of our most eminent men are occasionally troubled, and only keep straight by always keeping plenty of new bath in reserve in case of emergency. I have known baths to work badly during the heat of a July morning, and yet work perfectly well in the cool of the afternoon, and that without any doctoring whatsoever. It should be observed here that Mr. John Spiller, F.C.S., who took great interest and considerable trouble in trying to discover in what the superiority of Mr. McLachlan's process consisted, suggested that an addition of one grain of chloride of sodium to a twenty-ounce bath, with a few weeks' sunning and a little caustic potash, would give similar results.

The question is, which process is the best, and has it been generally adopted? If not, why not? There are continually letters in the photographic journals as to the best method of getting rid of pinholes, &c., and yet a process has been propounded for entirely remedying these failings: why is it not more generally used?

In concluding, let me explain that my reason for putting this question is twofold: Firstly, because there is a good deal of discussion just now about alkaline baths, and there is little doubt that a bath very slightly alkaline works quicker than an acid bath, and Mr. McLachlan's bath is, perhaps, slightly alkaline; and, secondly, because I find this process has been well considered in other countries, especially in America, where they are still actively engaged in working out the problem. Then, I ask, if this is the case, why should England, and especially London, be behind-hand in considering and fully working out this new method? Surely this country, which has done so much for the advancement of the art of photography in all its varied branches, and has so many eminent men in its ranks, should be the first to work out any process that is kindly and gratuitously brought forward by our own countrymen!—Yours, sir, respectfully, GEORGE HOOPER.

PRETSCH AND PHOTO-GALVANOGRAPHY.

DEAR SIR,—I regret to trespass again on your space, but in your editorial comments on my letter you do not, I think, quite go to the mark. I am the last person, I hope, to hold the *general* principle that "the absence of commercial success is an argument against the intrinsic excellence of a process;" but may it not be a fair argument in a *particular* case if good grounds are stated? The commercial success of a process will depend mainly on the following points:—1st, The practicability of the process; 2nd, its utility; 3rd, sufficiency of capital; last, not least, the *bonâ fides*, unanimity, business capacity, and intelligence of those at head-quarters.

Now, I ask any one to read the Pretsch patent, and try to work it according to the directions there given. Failure will be the result. Failure was the result, as eye-witnesses can testify, in all that the so-called inventor did at Holloway. He produced no commercially workable plates at all; he was tried under the most favourable conditions, and found wanting; so that here was one element, and that at the very foundation, tending to commercial non-success, and therefore, I humbly conceive, a legitimate argument in this particular case. But, besides this, Pretsch was an element of discord himself. He could not work, and he would not let others work. He brought false accusations against those who were labouring for the benefit of the concern—men who had something to lose—and our best hands were sacrificed because he asserted that his plates were wilfully spoilt. He had his own way; but the result proved his utter incapacity. It is really ridiculous how ready we English are to take up and back a foreigner, especially if, knowing our weakness, he happen to tack to his name "Herr" or "Signor," instead of plain "Mr.," when among us. I cannot otherwise account for Pretsch's finding adherents. Why do not these good people invite him back to this country, so that he may show us how to produce "*entirely untouched*" photo-engraved plates? True, we have now as public property his valuable patent; it has been free for some years, and a good many have nibbled at it and re-patented it (often making "confusion worse confounded"), and yet no one has arisen to produce by its means "entirely untouched," or even moderately touched-up, results.

Dr. Diamond asserted that Pretsch had not great resources. If my plain statements are true—and they are so till they are *proved* untrue—Pretsch had practically unlimited resources, and no one has since had as good a chance.

Therefore, Mr. Editor, your next statement is a complete confirmation of what I have been seeking to establish. You say, that "there is not, at this moment, after all the experiment by many able hands, during so many years, a single photo-engraving process in existence which yields perfect or even presentable impressions, from nature, without the aid of hand labour on the plate. All encomiums are therefore necessarily of a relative and qualified character." Yet Dr. Diamond asserted that Pretsch produced "*entirely untouched* plates;" that these were "some of his (Pretsch's) *very best productions*," superior, even, to those that had been touched up. Could anything be more absolute, unqualified, emphatic?

But how did the rumour get abroad that hand labour entered largely into results which were issued as untouched productions of the process pure and simple, exhibited as such by Pretsch, and as his own handiwork, to boot? Has it not been notorious? The answer is easy. The layman who knows little or nothing of engraving might be, and was, deceived, especially with subjects such as old ruins, ferns, &c., in which deficiencies made good can be easily concealed; a very different case, however, with portraiture, &c., having delicate, even half-tones. But practical engravers and printers were not quite so easily hoodwinked. We had from the commencement a skilled engraver on the establishment at Holloway, into whose hands we found it *necessary that every plate should pass*, first, to clean and burnish the matrix and improve the high lights, &c.; and, secondly, to bring up the shadows, put in deficient detail, and make half-tints even upon the printing plate. This is a fact, and it is worth tons of assertion. During my connection with the company I endeavoured to keep down this retouching as much as possible by improvements in the basis of the process. Still retouching was absolutely necessary to produce presentable impressions. After I ceased to have active management, and also after the dissolution of the company by the Court of Chancery, and the formation of a new company, consisting of Carlton, Fenton, and Pretsch, Mr. Carlton (one of the monied men whom I had originally introduced) seemed to have a perfect infatuation about Pretsch—engravers' retouching, and *even touching up of proofs*, was the order of the day. The plates were given out to be finished in the best style by expensive engravers.

I had early discovered that the process which I had made workable—and every plate produced at Holloway was done on my system, the Pretsch method having utterly failed—was not capable of yielding artistic results without considerable hand-labour. Steel facing was then unknown, and electro copper, especially in fine tint, soon wore out. I wished to creep on to the artistic by first developing the commercial applications, such as maps, and other line work, also reproductions of natural photographs, which could be used for manufacturers' catalogues, &c. But to this Pretsch strenuously objected, and frustrated in every way. It did not bring him prominently before men of rank and fame. Unfortunately, my partners—especially Mr. Carlton—were attracted by the glitter of names which Pretsch paraded before them as his friends and correspondents. I remember in our early acquaintance his showing me letters he had received from Mr. Fox Talbot! Of course, this was before Mr. Talbot knew that Pretsch was poaching upon his preserves, and that a patent was under weigh which he was afterwards to attack as an infringement of his of 1852.

The grand mistake in the company was keeping Pretsch on, and aiming at the highest art engraving when the process could barely do commercial work.—I am, yours truly,

June 6th, 1870. DUNCAN DALLAS.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

THE fifth monthly meeting for the present year took place on Tuesday, the 31st ult., at the Free Public Library, William Brown Street, Mr. JOHN HENDERSON, president, in the chair.

The minutes of the previous meeting were read and passed, and Mr. Henry Lupton was elected a member.

The weather on the day fixed for the monthly excursion had been very unfavourable, and only three members had gone. It was thought, therefore, that Dunham Park might be advantageously put upon the list for a future trip. Mr. Nash said he was authorised on behalf of Mr. Stedman, of Sandycroft, to offer hospitality to members who would visit the neighbourhood of Great Budworth, Cheshire, for an excursion, which offer was received with thanks.

Mr. **Thomas Higgin** then made the following remarks on

PHOTOGRAPHY AS APPLIED TO THE PURPOSES OF EDUCATION.

Mr. **Higgin** called attention to the fact that photographs have been found to be exceedingly useful to lecturers in large public schools, and asked the Society to consider in what way photography could be made more useful for educational purposes than it had been hitherto.

This question, he said, appeared to him to be of sufficient importance to be brought before the Society, and he desired to draw the attention of the members to it, to obtain their opinions, and to enlist their co-operation in some scheme, the object of which should be to make photography aid as much as possible the purposes of education.

Education was *the* question of the day, and any assistance which photographic societies can give would be highly appreciated by those who were devoting their time and energies to imparting instruction to others, and who are desirous of seeing the work facilitated by using all the available means which present themselves. It would be admitted that to help in this great work was worthy of the ambition of every amateur photographer; and if we gave the matter a little consideration, we should see we had it in our power to do a great deal towards this end.

Our chief pleasure now was to produce pleasing pictures of any views or objects that may happen to fall in our way, and, having taken a few prints, our negatives were buried in our boxes and consigned to oblivion. We work without any design or object, and, as a consequence, our results were comparatively of very little value; but if we were to lay down a system, and had a definite object in view, we should find that we could produce photographs of great value, and he was sure we should add to the pleasure of our work very considerably. Were we to choose certain subjects for illustration in accordance with our individual tastes and studies, and make them subserve the purpose of producing illustrations of the various objects selected, at the end of each year we should find that we had a most valuable collection of negatives. Prints might be produced from these negatives, be arranged in series, and might be issued at prices which, after covering the cost of printing, and leaving a small sum to be added to the funds of our Society, would bring them within the reach of everyone.

In this way we should make ourselves useful; we should raise the character of our art; we should take our proper position amongst the other societies of the town; and we should create a fund which might be applied to the advancement and spread of photography, provide proper public rooms for meetings, and for for carrying on experiments and for general work.

That photography was felt to be of great use for educational purposes might be already known to some of us; and it only required that we should ask the question, Was it so? to find that some of the foremost men in our large schools were constantly endeavouring to collect photographs illustrative of various branches of study, in order to use them in their lectures, and that they felt the want of a cheap issue of a complete series on the different subjects on which they were called to give instruction. He had found that several of his own micro-photographs had been of great use in illustrating the lectures on geology in Rugby School, and he knew that other photographs had been found to be similarly useful.

We were told, and we could readily understand, that by the aid of photographs a deep interest could be raised and impressions could be produced which could not be obtained by any other means. Let us, then, adopt a plan or plans for this summer's work; let us see what could be done during this season; and let us apply for spaces for the results in the Exhibition of 1871, in the Educational Department. The Commissioners desired to bring prominently into notice all the means and appliances found to be useful for educational purposes; and we should there have an opportunity of making known that we desired to give to others the benefit of our rambles and of our work.

The subjects which we might very profitably take up were almost infinite, and he would mention some. A series on Geology would be very valuable; another series on Clouds; another on Naval Architecture; another on Architecture proper; another on Archæology; another on Ethnology; others on the different branches of Natural History and Science, on Anatomy, &c. We had only to lay down plans and work to them, to direct our energies in definite directions, in order to produce very valuable results of a kind especially suitable for members of a society of amateurs.

He felt very much the desirableness of aiming, in their labours, at a definite object, and would like much to see their Society take this matter up warmly, doing, individually and collectively, what they could to raise the character of their Association, and to advance their art by making it of more general use and advantage to the community at large.

The importance of the course recommended was further urged by the President and Mr. Guyton, and met with general acceptance. It seemed probable that three of the departments of study suggested would find willing workers in them.

A vote of thanks was unanimously passed to Mr. Higgin.

A motion was carried to effect exchanges in photographic prints.

The next excursion was fixed to take place on Wednesday, the 15th inst., to Furness Abbey, the President inviting the members and their friends to dinner on the occasion.

Thanks were accorded to Mr. Henderson for his courtesy.

A fine combination photograph of Runcorn Bridge was shown by Messrs. Robinson and Thompson. Mr. Murray exhibited some views of Croston, Mr. Roberts several of Speke, and Mr. Henderson a number of stereographs.

The meeting was adjourned to Tuesday, the 28th instant.

Photographic Society of Marseilles.

A **meeting** of the Society was held on the 11th ult., M. **Charles Teisseire** in the chair.

The **President** commented upon the works of Niepce de St. Victor, whose death had recently occurred, and congratulated the Society on the possession of several specimens of chromo-photography which had been produced by the deceased philosopher.

It was announced that an industrial exhibition would be held next year at Lyons, which would include fine arts and photography.

M. **Mayer** forwarded some specimens of improved albuminized papers.

M. **Davanne** presented the *Annuaire Photographique*, and M. **Leon Vidal** his new work on Carbon Photography, embracing the newest processes at present known.

M. **Vidal** stated that he had not mentioned the employment of hydrochloric acid for the purpose of removing the greenish hue of the whites of carbon prints, nor that of cyanide of potassium recommended for the same purpose by M. Jeanrenaud, as the benefits to be derived from the use of these compounds were not satisfactorily established.

M. **Meynier** exhibited M. Romain Talbot's enlarging apparatus.

M. **Taylor** observed that enlargements produced upon paper by development were endowed with exceedingly good keeping qualities, some specimens produced many years ago being still perfectly good.

M. **Charles Teisseire** stated that he had, in conjunction with M. Vidal and M. Jacquemet, made an excursion into Italy for the purpose of visiting the principal photographic establishments in that country. In Florence, the house of MM. Alinari was well worthy of note, and was, indeed, one of the finest studios for the reproduction of paintings and works of art in Europe. At Milan, two photographers, MM. Calzolari and Rossi, occupy themselves with the Albert process, and produce some very successful results. At Venice, M. Naya's well-known establishment was visited, and the large and beautiful specimens of Paul Veronese, Raphael, &c., were greatly admired. M. Teisseire testified to the courtesy and kindness of the many gentlemen whose establishments they visited.

The proceedings then terminated.

* * *

Talk in the Studio.

Albert's Process—Another Presentation Print.—We have pleasure in announcing that we shall, in the course of a week or two, present our readers with another example of Herr Albert's new photo-mechanical printing process. The subject is an interior, presenting a view of Herr Albert's printing establishment, and affording some idea of the extent of the operations now carried on. It will interest English photographers to know that M. Lemercier, of Paris, whose name is already largely associated with photo-engraving and photo-lithography, has purchased the Alberttype patent for France.

Woodbury's Photo-Relief Patent.—The patent and complete plant for working the photo-relief printing process, the property of the company now in course of winding up, was sold a few days ago in one lot for £2,500 to Mr. Vincent Brooks, the well-known lithographer. We may fairly hope that the process will be worked by private commercial enterprize with more advantage than it has yet been by companies in which divided counsels were fatal to success.

Photographic Society of London.—The last ordinary meeting before the recess will be held in the Architectural Gallery, Conduit Street, Regent Street, on Tuesday next, when a letter from Herr Paul Pretsch, of Vienna, will be read, and some specimens of photo-galvano-graphic work exhibited. Mr. C. F. Jessen, of Bradford, will show some examples of the Berlin "Lichtdruck" process.

Dogs and Photographs.—A correspondent writes to the *Athenæum* on the subject of a recent review, in which the reviewer remarked that "no dog could ever be taught to recognize in a bronze cast a copy of himself. The child soon learns to say 'Me, me,' when it sees its own photograph." The correspondent says:—"The case is, I think, unfavourably put for the dog; and, were the objects put differently—the photograph to the dog, and the bronze cast to the child—most likely the one would be as much puzzled as the other. But I have it on pretty good authority that a dog has been known to recognize its master's photograph when enlarged; that it fawned upon it, and attempted to get behind it to unveil the mystery, just as a child peeps behind a mirror to get a further explanation of an image of itself. My neighbour's peacock admires itself regularly in a large mirror; and my bantam struts with pride, or crows with defiance, before the same. On the other hand, we have it recorded in Sir John Lubbock's 'Pre-historic Times' that many Australian savages were utterly unable to understand that full-length portraits of themselves were pictures of men at all." The editor of the *Athenæum* adds:—"We congratulate our correspondent on the civilization of the animals in his neighbourhood."

Soluble Double Iodides.—At a recent meeting of the Photographic Society of Vienna, Dr. Van Monckhoven read a paper on some new double iodides suitable for use in collodion, in which he described a double iodide of potassium and cadmium possessing great solubility in alcohol and ether, which renders it valuable for use in collodion.

Alberttype.—Dr. Monckhoven, having recently visited the printing establishment of Albert, at Munich, is satisfied that the new photo-collographic process is quite of a practical character.

Herr Obernetter's Photo-Collographic Process.—We have been favoured with some further examples of the new photo-mechanical process now in course of development by Herr Obernetter. They are exceedingly fine landscapes, and seem to lack no quality of excellence possessed by fine silver prints, although Herr Obernetter still regards the process as in an experimental stage. A communication on the subject from the pen of the inventor will shortly appear in our pages.

Collodio-Chloride Process on the Continent.—In a recent letter from Herr Obernetter, whose application of the collodio-chloride process to the production of permanent sensitive paper has been so successful, he says:—"It will be interesting to you, as the inventor of the collodio-chloride process, to hear that I have already expended in the preparation of these papers as much as 300 pounds weight of silver."

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To Correspondents.

R. Brown (Munnipore).—We shall have pleasure in proposing you as a member of the Photographic Society of London at the next meeting on the 14th inst. You will receive due intimation from the secretary of your election, and of the amount of subscription.

J. F. Butler.—Of the three lenses you name, that with greatest angular aperture will work most rapidly. That with 2 inches aperture and $4\frac{1}{4}$ inches focus, which you mark B, will necessarily be more rapid than that with $1\frac{3}{4}$ aperture and $4\frac{1}{4}$ focus (A), or that with $1\frac{3}{4}$ focus and $4\frac{1}{2}$ inches focus (C). Both these, having a slightly smaller angular aperture, will of necessity be somewhat slower. The first mentioned (B) we know to be a good lens, and the others we believe to be so, but prefer the first. It will cover a 5 by 4 plate, and it is suitable for instantaneous card or stereo views. 2. Yellow test-paper is used for testing alkaline solutions, the action of which turns the yellow brown. You may easily make the red litmus paper for yourself. It is only necessary to submit the blue litmus paper to the fumes of acetic acid.

R. H. W.—It is somewhat unfortunate that your glass is only on the west side of your studio, and that it should be shaded on that side by the close proximity of a hill. If it had been possible, the north side would have been much better, and the east side would have been better than the west. As regards blinds, you cannot do better than have curtains sliding on rods. A warm grey is the best for the inside of the studio. A reflecting screen should be covered with white calico, and may be seven feet high by four or five feet wide. An oil-cloth will answer well for the floor. You will be able to get it of some local upholsterer.

E. W.—The majority of the photo-lithographic processes now in use are transfer processes. There have been several described in our pages. You will find a good article, giving practical details of the process in use, by Mr. Butter, at the Woolwich Arsenal, in our Year-Book for 1867; some articles, giving full details of the photo-zincographic process used at the Ordnance Survey Office at Southampton, by Lieut. Waterhouse, appear in our volume for 1868; and other articles on the subject appear in our pages.

Geo. Tear.—We do not know any one who is working photo-lithography commercially in London. Try the Autotype Company.

G. Bruce.—Thanks. We shall act upon your suggestion. Thanks for promised sight of prints. At the time we write they have not arrived. We will return them early after receipt.

C. E. F.—Methylated spirit will answer perfectly for use in the iron developer.

Hampshire.—The front lens of the portrait combination you mention (No. 2), or, indeed, any portrait combination, may be used as a view lens, but it will possess the characteristics of an ordinary view lens, and not of a wide-angle lens. No. 3 will answer your purpose best, as, with large stops, it will include an ordinary angle well, and work rapidly, whilst with small stops it becomes a wide-angle lens. Of course it will not include as much on a card plate as a lens of shorter focus, unless you can retire further back with the camera. Try No. 3 for your seven by five plates, and then determine your smaller size.

Arthur Taylor.—Thanks. We shall look with interest for details.

B. F.—The flatness and blackness under the eyes, nose, and chin, of which you complain, is due solely to imperfect lighting. You have too much top front light, which flattens the face, and destroys modelling, and leaves the portions under all prominent features quite without illumination. 2. We do not like the tones so black and inky; a warmer tone would suit the character of the prints better. Your lens does not cover sufficiently well for standing card portraits.

R. T. M.—Try the intensifier of ferrid-cyanide of potassium and nitrate of uranium for toning your prints for transfer. This will give you a warm brown tone. The modification in our last Year-Book will give you a deep purple brown.

F. R. S.—The Photo-relief Process will be worked commercially by Mr. V. Brooks, who has just purchased the patent and plant.

Several Correspondents in our next.

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Photographs Registered.

Mr. A. Nicholls, Cambridge,
Photograph entitled the Ferry.

Mr. T. Forrest, Pontypridd,
Photograph of W. Edwards.

Mr. A. Elsden, Hertford,
Photograph of Group—Prince of Wales, &c.

Mr. Thos. Tyley, Bristol,
Photograph of Rev. J. D. Hastings' Monument.

Mr. J. Riley, Richmond,
Photograph of Painting—"The Bainesse Ox."

Mr. Skeolan, Cheltenham,
Photograph of Sir H. Tichborne.

Mr. Britton, Forest Hill,
Two Photographs of Rev. H. Stevens.

PATENT OFFICE

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

	PAGE
Examples of American Photography	277
Paul Pretsch and Photo-galvanography	278
Remarks upon Carbon Printing. By H. Baden Pritchard	279
American Correspondence	279
Photographic Rambles in South Wales. By Thos. Gulliver	280
Dodges. By Edward Dunmore	281
On Some New Double Salts of Iodine and Bromine Soluble in Absolute Alcohol and Ether. By Dr. D. Van Monckhoven	282
Mr. E. Edwards' Photo-mechanical Printing Patent	283
Directions for Registering Designs for Articles of Utility	284
Photo-Mechanical Printing Processes. By Lieut. J. Waterhouse, R.A.	285
Manipulations in Johnson's Carbon Process	286
Proceedings of Societies—The Photographic Society of London—South London Photographic Society	286
Talk in the Studio	288
To Correspondents	288

EXAMPLES OF AMERICAN PHOTOGRAPHY.

We have of late been favoured by various friends in America, both the United States and Canada, with many choice examples illustrating the progress of our transatlantic friends in portraiture and landscape photography. A brief notice of some of the work before us may be interesting to our readers.

One of our first impressions, after examining a somewhat extensive selection with which our friend and collaborateur, Mr. E. L. Wilson, has favoured us, as a fair average illustration of the work in the States, is, that amongst the transatlantic portraitists a greater spirit of enterprise, or a keener interest in novelties, prevails than is found in this country. Amongst our own portraitists the ordinary card portrait still prevails; a few produce cabinets, and a still more select number produce Salomonesque portraits. With the exception of the variety of style, as well as size, found in the last mentioned class of photographs, there is but little difference, except in degrees of excellence, in the work done throughout the country. In America we see a keener desire for variety and novelty manifested. The cabinet portrait has been much more commonly adopted in the States, as well as in continental Europe, than in this country, where it was originated. But, apart from the question of size, we have before us much variety of style and treatment. We have the "Rembrandt" style, in which unusual and, in many instances, effective modes of lighting the figure are adopted; "mezzotints," in which, by printing through a medium, a peculiar kind of softness is secured; "porcelain cards," apparently another form of mezzotint printing; examples of the "Berlin process," which consists in taking negatives on the polished side of ground glass; together with several other less distinctive or effective styles. The use of retouched negatives seems to have become very general amongst the best portraitists.

The "Rembrandt" style, in skilful hands, is very effective, and several of the examples of this kind by Kurtz, of New York, and by Baker, of Buffalo, possess high pictorial value. But the chief advantage, it seems to us, which has arisen from the introduction of the Rembrandt style, has been an improved and more daring mode of lighting portraits generally. We have many examples before us in which, without the *bizarre* effects of some of the Rembrandts, there is a variety of pictorial qualities perfectly harmonizing with the general quality of the portrait, and highly effective. A special characteristic which distinguishes these portraits from ordinary photographic portraiture is, the prevalence in the faces of half-shadow. It has been the practice amongst photographers to aim at getting the face as light as possible, compatible with modelling, sometimes, indeed, to the loss of modelling. The mass of the face has been in half light and light. In the class of portraiture to which we are referring much of the face is in half shadow, which is, however, kept quite transparent. That portion of the face which in ordinary portraits consists of light, here consists of half light, a point here and there less than a pin's head of pure light being admitted. The effect is very brilliant, and gives much roundness and solidity to the pictures. Mr. Kurtz (of New York) and Mr. Notman (of Montreal) seem to be the greatest masters in this style, many of their pictures being amongst the most absolutely perfect examples of photographic portraiture we have seen. Loomis (of Boston), Keeler and Fennemore (of Philadelphia), Carbutt (of Chicago), and Inglis (of Montreal), also deserve honourable mention for this class of work.

A very excellent style of background is common in connection with these pictures, to give effect to the lights in the picture and tenderness to the flesh, of which much is in shadow, a dark background becomes desirable, and is generally used. A picture with a very dark background looks somewhat heavy when placed on a white mount. To relieve this heaviness, the picture is masked in an oval, and by a second printing a square margin of grey is printed around the oval. This plan has occasionally been employed in this country by amateurs, Mr. Henry Cooper and Mr. Harmer having shown some fine examples; but it has never, we believe, been adopted here in commerce, whilst amongst the best American artists it appears to be generally employed. It certainly gives great value to the picture, and is well worthy of the attention of English portraitists.

With the exception of some prints from Mr. Inglis, of Montreal, we have not seen any recent examples of transatlantic Salomonesque portraiture. A portrait of Prince Arthur, in this style, by Inglis, is very fine; but the majority, although brilliant photography, are somewhat crude and spotty as artistic productions. Some large portraits by Black, of Boston, are exceedingly fine. Several samples of untouched enlargement, without name or details of processes, are very perfect.

In a series of cabinet portraits from Notman and Frazer, of Toronto, of which firm Mr. W. Notman, of Montreal, is a partner, but Mr. Frazer, we presume, the active photographer, we have some unusually fine pictures and some novel effects. Here is one representing a lady driving. She is, of course, in open-air costume, seated partially enveloped in fur rugs, with whip and reins in her hands. The figure is about two-thirds length in the cabinet picture, and there is no room, of course, for horse or vehicle in the space of the picture; the position, costume, and accessories serving, however, admirably to suggest driving. Another lady is playing with a bird perched on her finger. In most of these the double printed background we have mentioned is employed, and in all the rich breadth of shadow prevails, which is a characteristic of M. Adam-Salomon's work and of the American "Rembrandt" portraits. In all the technical photography is perfect and the art qualities exceedingly fine. From Mr. Notman we have also some of the finest transatlantic landscape pictures we have seen; two or three large views of Niagara, besides being admirable renderings of the mighty fall of waters, approach the sublime in the effect of cloud, light and shade, and atmospheric effect.

Mr. Notman also sends us perhaps the most perfectly composed group we have ever seen produced by photography. The subject is what is termed a "skating carnival," which was given in Montreal during the visit of Prince Arthur, whose portrait appears prominently in the group. The scene is a most animated one, consisting of some hundreds of figures in fancy costume engaged in skating in a "rink," gaily decorated for the occasion. Of these figures nearly two hundred are perfectly made out, and the features perfectly traceable, although the picture does not exceed nine by seven inches; and we do not remember ever to have seen a more charming looking assemblage of pretty girls comprising every style of beauty, and of fine-looking men. Such a noble and attractive looking assemblage must make Englishmen proud of their kinsfolk in the dominion of Canada. We have no details from Mr. Notman of the method by which the group was produced, but it seems tolerably clear that it has involved enormous labour. The portraits appear to have been taken singly and in groups, according to a pre-devised plan to suit the composition, the whole being finally pasted on one large sheet of paper, retouched background and accessories painted in, and then the whole reproduced in a smaller size. The great beauty and the great difficulty of the case is the admirable composition and grouping, so as to secure harmony, ease, and naturalness. The arrangement of men and women, and the suitable juxtaposition of costumes, the choice of position and occupation—some figures skating, some in conversation, some making salutation, some standing and looking on—but all varied and all natural; the admirable perspective, the perfect definition, and the perfect light and shade and fine relief, all tend to produce a group such as we have not before seen produced by photography.

Since the receipt of this group, we have received two others of a similar character, but on a larger scale, by Mr. Inglis, of Montreal. One of these consists of the subject just described, the carnival of the Victoria Skating Rink, and the other the opening of the Montreal Curling Rink. The latter was the first composition of the kind produced, and was the origin, we understand, both of Mr. Inglis's own skating carnival group, and that of Mr. Notman. The game of "curling" does not lend itself so favourably to pictorial composition as does skating, but the picture is very fine, and, if we may judge by that of Prince Arthur, the portraits are admirable. Mr. Inglis's view of the skating carnival is also very admirable. There is in it more action, more of what may be termed carnival effect, and probably more truth to the actual unpremeditated confusion of the scene, than in that by Notman, the latter being the more perfect as a pictorial composition. Mr. Inglis states that in his group upwards of five hundred separate photographs were taken; these were pasted on a large sheet of paper in their due relations, and, after some work by the artist, reproduced in the size before us, which is twenty inches by twelve inches. Examples of the skating and curling group in this size may be seen at the London Stereoscopic Company's establishment, where they are published in this country. Mr. Inglis contemplates sending the original skating group—which is coloured, and in size sixty inches by thirty-six—to the next exhibition of the Photographic Society in London. The novelty of the scene and the excellence of the work will give it great interest. He also contemplates the production of a similar group of the Canadian game of Lacrosse.

Amongst our Canadian specimens we have some examples of portraiture from Messrs. Sheldon and Davis, of Kingston, in Western Canada. These are very admirable examples of the "Rembrandt" lighting and of skilful retouching on the negative, and, both as technical and artistic photography, are interesting illustrations of the excellence attained so far west.

Of an extensive and interesting series of scenes in New Brunswick, by Mr. G T. Taylor, we must speak another week, as our space is exhausted for the present.

PAUL PRETSCH AND PHOTO-GALVANOGRAPHY.

A somewhat curious discussion has occupied a portion of three meetings of the Photographic Society and several columns of the photographic journals. The question discussed has been, Were any of the prints issued by Mr. Paul Pretsch from plates untouched by the engraver? The real significance of the question had originally less of a personal than a general bearing, the point at issue really being, were photo-galvanographic plates capable of yielding presentable impressions without retouching? The personal element was, unfortunately, necessarily involved, and as much of the discussion has been devoted to the personal characteristics of Mr. Paul Pretsch as to the capabilities of his process.

The discussion originated thus: At a recent meeting of the Society Mr. Courtenay described a photo-galvanographic process he had recently patented, and exhibited specimens. The president asked if the process and its results were not singularly like what Paul Pretsch had produced many years ago; to which the response of Mr. Courtenay was, that the specimens now exhibited were from untouched plates, and that all Paul Pretsch's works were retouched. The president replied that *all* Pretsch's were certainly not retouched, as he had some untouched in his possession. Mr. Peter Le Neve Foster said that he had reason to believe that no plate of Paul Pretsch's was ever issued without more or less retouching, the results not being presentable without the aid of the engraver.

Mr. Duncan Dallas, an associate of Pretsch's in the Photo-galvanographic Company, then, at the request of the Secretary of the Photographic Society, gave a *resumé* of the history of Pretsch's operations, and imported into it a degree of personal animus which, we must confess, we wish had not been manifested. This communication, which affirmed that all the plates were retouched, was seen in our columns by Mr. Pretsch, who replied to it in the letter which was read before the Society on Tuesday evening. He denies emphatically that all the plates were retouched, and gives a list of subjects which he states were quite untouched.

The matter finally resolves itself into a question of credibility of evidence. Mr. Pretsch asserts that certain plates were untouched; they were published as untouched with the announcement distinctly printed on the margin. In spite of this Mr. Dallas states, that to his personal knowledge these very plates were worked upon by the engraver. The issue is an awkward one. Here is a respectable company, with the honoured name of Roger Fenton at its head, publishing deliberate lies, falsifying science, and cheating the public, or Mr. Dallas is mistaken. Dr. Diamond, who, in a letter to the society last month, stated that several of Mr. Pretsch's best works were untouched, was the intimate friend of Roger Fenton, who at a comparatively recent period bore testimony to the earnestness of Mr. Pretsch, by remarking to Dr. Diamond, that "poor Pretsch would at any time go without his breakfast to secure means for prosecuting a chemical experiment." With excellent impressions before him, bearing the voucher of the company on the margin, to the effect that they were untouched, whilst others were as admittedly worked upon, Dr. Diamond was fully justified in expressing his conviction. But he had further evidence. In his possession were several of Pretsch's copper-plates in a virgin state, not even cleaned from the process of electrotyping, as well as others bearing no evidence of retouching. But this evidence is, unfortunately, of little avail, for besides the great difficulty of detecting in a copper-plate the certain evidence of touching, there is the fact that the plates are produced by a double process, and the printing plate which bears no evidence of the tool of the engraver may have been, it is pointed out, produced from a matrix which had been skilfully and elaborately worked upon. The matter finally resolves itself, therefore, as we have said, into a question of credibility of evidence. Mr. Foster, and Mr. Devonport, a skilled technical observer, are in possession of information which satisfies them that all the plates did require touching and were touched, and hence the commercial failure of the project. Mr. Dallas states that the fact that all the plates were worked upon is within his own personal knowledge. Mr. Pretsch distinctly alleges that a number of plates which he specifies were not touched; the said plates bear the statement of the company issuing them that they were not touched. Dr. Muller, a chemist engaged with Mr. Warren de la Rue, with whom Mr. Pretsch was for some time associated, asserts his conviction that many of the plates were not touched, and the president and Dr. Diamond have plates in their possession which they have reason to believe were not touched.

As regards the process itself, it is certain that it has not succeeded, either in the hands of Mr. Pretsch or others; but no certain argument is derivable thence. It might produce many plates of suitable subjects more or less presentable without retouching; but if the range of subjects suited for its capabilities was limited, or if, as is tolerably certain was the fact, it was uncertain in operation, requiring nice and not well-defined conditions, there is reason enough for its failure commercially, despite a few successes with exceptional subjects. And it is a curious and noteworthy fact that during the last dozen years there have been at least as many processes of photo-engraving announced, sometimes with much flourish of trumpets, and there have been, more over, many fine specimens, promising almost every desirable excellence, produced, and yet there is not one of them, rendering subjects from nature, in successful commercial operation at this moment.

REMARKS UPON CARBON PRINTING.

BY H. BADEN PRITCHARD,

Of the General Photographic Establishment of the War Department.

Twelve months' practical experience of the autotype (Johnson's) printing method fully confirms my first belief in its value and capabilities, when in the spring of 1859 I resolved upon its introduction into the photographic department at Woolwich. From that peried the process has been continually worked, at first experimentally, and for small issues of prints, and lately for the production of all descriptions of photographs produced in the department, the number of carbon prints prepared already amounting to thousands.

The description of negatives taken at Woolwich are, for the most part, guns, carriages, iron targets, military groups, &c., and these, although in several instancss but rough sketches, or diagrams, include pictures of considerable delicacy and finish, all of which are rendered full justice to by the tissue now issued by the Autotype Company. As regards the execution of fine portraiture, such as vignetted busts and the like, I am, of course, unable to form an opinion; but recent results which I have obtained seem to promise early success in this direction.

The manipulations now carried on are, as one may imagine, somewhat different from those originally laid down by Mr. Johnson, and daily experience is, of course, adding considerably to our knowledge of the process. The *modus operandi* as at present carried on admits of prints being prepared from the sensitized tissue, mounted, and finished, within an hour, the rapidity with which the pictures are produced seeming, indeed, to increase the sharpness and brilliancy of the results. The negatives are taken in such a manner that a quarter or half a tint on the photometer is sufficient for their exposure, the careful avoidance of over-printing being one of the essentials of success. The printed tissue is placed moist upon the metal plate, allowed to stand for a few minutes to bring about a swelling of the gelatine, washed in warm water (105° to 110° F.) to the requisite degree, put under a rose of cold water, tanned in alum, washed again, and the wet transfer paper at once laid on. Rapid drying in a warm locality succeeds, and when the print leaves the plate it may be rubbed with turpentine, or simply immersed in water and again rapidly dried, to increase its brilliancy and the transparence of the shadows.

The sensitizing of the tissue is brought about with a three per cent. solution of bichromate, the material now prepared permitting the operation of sensitizing being carried on at a temperature actually of 80° Fah., the blackened gelatine evincing no tendency whatever to run or discolour the bichromate bath.

The printing is best carried on in diffused light, especially in the present bright weather, so that the amount of exposure may be the more accurately estimated.

For the last six months silver printing has virtually been superseded by carbon at Woolwich, and only in a very few special instances is albuminized paper employed, and it is mainly due to the energetic exertions of Serjeant-Major Shuckard and Serjeant Dann, of the Royal Artillery, who have laboured long and successfully with the details of the process, that it has been possible to effect this radical change in the printing branch of the establishment.

AMERICAN CORRESPONDENCE.

The Exhibition—Dr. Vogel—Softness—Old Pictures.

The Photographic Exhibition.—The American photographer is now busied in making final preparations for the great Exhibition at Cleveland, June 7th to 11th inclusive; and as that has also been the all-absorbing topic for weeks, very few novelties are to be found worth mentioning at this time. I shall, in my next, give you full details concerning this grand affair, for grand it will doubtless be. Hundreds of photographers will assemble there from all parts of America, for I know them to be coming from Texas, Alabama, Georgia, California, Canada, and all the nearer States: coming to compare work with each other; coming to talk over together the trials, the difficulties, and the way to success in their great and useful profession; coming to meet in social comfort, and to consider how photography may be improved, elevated, and advanced. The result will be better photography, and, as a consequence, greater patronage from the public, and increased popularity and prosperity for photography.

The hall in which the exhibition is to be held is an immense skating-rink, floored over in the summer for such purposes. It will be beautifully festooned with flowers and evergreens; an abundance of light is admissable from all sides, and the excellent local secretary, Mr. J. F. Ryder, will so arrange the hanging as to secure an excellent effect on all the productions sent for exhibition. During part of each day the business meetings of the Association will be held, and during each day and evening the exhibition will be open to the public. A grand lantern exhibition will be given during one or two evenings, and a shorter one at the close of each evening, for an hour. A band of music will be continually present to enliven the scene; and, altogether, it may be predicted that photography and its friends will see a happier day for them than they have ever before witnessed. If this prediction prove true your readers shall hear of it, and have full particulars in my next.

Dr. Vogel.—That warm, ardent, earnest friend, and lover of photography, Dr. Hermann Vogel, is with us. He arrived on the 24th of May, in excellent health and spirits, and it was good to meet him face to face, and to share a warm greeting with him.

What a friend-maker is photography! There is an attachment—a fraternal feeling—between photographers that no strangeness can overcome. There is a fascination about our art which binds its votaries together in their interests, and makes the warmest kind of friends.

But few who write on this never-ending theme have been so careful and conscientious in their instructions as our mutual friend, Dr. Vogel. His whole heart seems wrapped up in the interests of photography. Constant practice—and, better yet, constant intercourse with those who practise the art for their daily bread—enables him to appreciate and to see quickly the shortcomings, and the wants, and the desires of those who are benefitted by photographic writers, and therefore gives him an immense and valuable power which enables him to do much good, and which makes his directions safe to follow. The profession is indebted greatly to him, and this sense of obligation to and love for him prompted the photographers of America to tender him a cordial invitation to be present during our annual meetings and exhibition at their expense. He accepted, and is now with us, greeted warmly by all he meets, and taking in the sights of this vast country. If our equally esteemed and equally good friend the Editor of the News was with us, then would our happiness be complete. But ah! how can we expect one who is bound to such an imperious and exacting master as a weekly photographic *News*paper? Little do the inexperienced know of the vast amount of labour attendant upon the duties of your sanctum. Still I hope there is a day near at hand when you may break away from them, and again visit our shores. You will see photography wonderfully changed since you were here last.

Softness.—The hankering after "softness" continues to exist among our photographers, and instead of sitting down at the retouching desk, and carefully and patiently working it out at the end of the pencil, the brains are racked for some mechanical contrivance to secure the coveted result. It has not yet been secured by any of them, for there is nothing yet equal to retouching the negative, except a negative of such quality that retouching would not improve it. The last dodge made public to accomplish "softness" is from the far west. A square box is hung on, or in, a frame, so that it may be adjusted to the sun. This box is provided with several square openings or tubes, running from the top of the box to near the bottom, and at the lower ends of these the printing frames are placed. The idea is to shut off all light except that falling vertically upon the negative, and such light is always kept upon the negative during printing by turning the box in the frame by means of a crank. I enclose you a carte printed in this way.

Another idea in this same direction is a printing frame so arranged that the paper may be suspended at a slight distance from contact with the negative, and thus printed. Similar effects to all the other "mezzotint" processes are thus secured; but I think they are all objectionable. They appear pretty at first sight, but when compared with prints from a really good negative, or from one carefully retouched, what good qualities they appear to have "do fade as a leaf."

Old Pictures.—The exhibition has brought out a collection of old pictures that are very curious and interesting, being part of a collection in the hands of J. R. Lambdin, Esq., one of our greatest national portrait painters. They are the pictures of many of our old statesmen, and most of them are Daguerreotypes and Talbotypes. Of the latter, one of Henry Clay was made in 1847, by Langenheim, and really worse paper prints than it are made every day now. Scarce a trace of deterioration is apparent. There are others equally good, and the Daguerreotypes are as bright and brilliant as ever. So photography is not so treacherous as some would have us believe.—Truly yours,

Edward L. Wilson.

PHOTOGRAPHIC RAMBLES IN SOUTH WALES.

No. 1.

BY THOMAS GULLIVER.

North Wales has been well described, and every part worth notice has been pretty well photographed. Now, with the permission of the Editor of the News, I shall feel a pleasure in directing the steps of photographic tourists and others towards the South, and I venture to assert that those who visit it will not be disappointed. To those in search of health, to those who wish for change of air, to those who long for a relaxation from the busy toils and care of business, to those who would wish to add a few real beauties in the shape of photographic negatives to their stock, I say, come down to South Wales. Innkeepers' charges are moderate, water is very plentiful (sometimes in excess), fresh subjects for the camera are to be had in abundance, which I hope to prove to your readers further on.

I well recollect my first impressions on arriving here, now about fifteen years ago, when, tired of endeavouring to persuade the inhabitants of Gravesend, Milton, and Northfleet to have more of their portraits taken by the Daguerreotype process, I opened a very humble studio in Portland Street, Oxford Market, London. Here fortune did not favour me, so I packed up my traps, and set off for Bristol. Not finding a suitable place there, I was thinking of trying the city of Gloucester, when a bill caught my eye, announcing the sailing of the "Lord Beresford" steamer for Swansea next day; so I embarked about seven o'clock next evening, and arrived in Swansea Bay in time to witness a glorious sunrise in June. I had heard of the Bay of Naples, and often, when going from Liverpool to Dublin by the packets, seen a sunrise over the Bay of Dublin, but for a sight worth seeing, give me Swansea Bay in early morning; it is something that compensates for the inconveniences of a rough Channel passage.

Swansea.

At the time referred to, Swansea was not crowded with photographic professors, as it is now, as only one, a gentleman, a good Daguerreotypist, was there, and then about leaving for Bristol after a successful season. The others came some time after, and did excellent business with collodion positives, getting fourteen shillings for quarter-portraits slightly tinted with oils. As the town and surrounding country suited my taste, I determined to remain, and many others have since then followed my example. In consequence, Swansea is now fully provided with photographers, some of whom value their work and skill at a very low figure indeed.

Swansea is about 211 miles from London by the Great Western Railway, 108 from Gloucester, 42 from Cardiff, about 90 by sea from Bristol, and 72 from Milford Haven. Swansea has not many public buildings of great value to the wandering photographer; the remains of an old castle with the ruins of pure Norman arches is still standing in the centre of the town, and can be photographed from the Strand. In the Parish Church lie the ashes of the White Rose of England, the wife of Perkin Warbeck, the Pretender. In Goat Street is the house where Beau Nash, king of Bath, was born; in High Street is a very old house, where it is said Oliver Cromwell took breakfast before subduing Oystermouth Castle; the new Hospital, the Town Hall, and Temple Street and Post Office are worth photographing. The town is prettily situated, the sands, I think, equal to the sands at Weymouth. The population is 60,000; the market the largest in South Wales. The North and South Docks afford studies of groups of shipping for inland photographers to send or take to their friends. Near the North Docks is a large girder bridge, erected by Sir W. Armstrong, and on a dark morning, November 29th, 1865, the bridge happened to be left open, and a coal train coming from Meath, consisting of twenty-nine trucks and engine, together with engine-driver, stoker, and one thousand tons of coal, fell into the Lock, in which was about nineteen feet of water. The guard of the train escaped by jumping off just in time. About a mile west of Swansea is Singleton Abbey, the residence of Mr. T. H. Vivian—a pretty and picturesque building, but not to be seen from the road; permission must be obtained to photograph it. Two miles from Swansea is the pretty village of Sketty, with a small, neat church and schools. On the north of Swansea, two miles from the town, are all the chemical and copper works, and the Landore Viaduct, a striking subject in a photograph, but difficult to get, owing to the smoke from the works.

Having thus let the reader over and around Swansea, I propose to give a description of the various places and towns in the neighbourhood; how to get there, and what to photograph—that is, if we agree as to the sort of picture required. I am no lover of farmyard scenes or trim lawns, new houses, or three haystacks, a road and a cottage, with a glaring sun just behind the camera; or two rustics, a publichouse, and one end of a house, ticketed "Rural Felicity." O, no! My taste lies in another direction. Nature in her wildest form, rocks and caves by the sea side, the bed of a river between two deep banks, spanned by a one or two-arch bridge overgrown with ivy, large boulders in the foreground, and the light just nicely striking across the scene and between the branches of the trees—these and such like scenes are to be found here in plenty, and in describing them to the readers of the News I shall only give my own experience, and as guide, philosopher, and friend, endeavour not to overstep the modesty of nature.

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DODGES.

BY EDWARD DUNMORE.*

I have this evening selected as a title for my paper that very common but expressive word, "dodge"—a word that may either signify an utterly unfair and despicable trick, or be a praiseworthy plan to overcome a difficulty.

It will be necessary, therefore, in dealing with a word that admits of such diametrically opposite interpretations, for the sake of clearness, to cut it up, as it were, into three divisions, and consider each separately. We will call the first the "dodge proper;" the second the "dodge expedient;" and the third the "dodge delusive."

The first is generally understood to express a clever plan to obtain a certain result *not* found in the published rules and regulations laid down for the guidance of photographers—a method some ingenious worker has found by experience to answer satisfactorily before giving it up for the benefit of the community at large. Thus interpreted, examples of this kind are numerous, so much so that I shall not be far wrong in saying that the art and practice of photography consists of little else. Certain principles and rules first laid down form the framework; but the successful practice depends entirely on the filling up. As it will occupy too much time to consider more than a few examples of this class, the purpose of this paper will be best attained if we select for consideration some calculated to be of use to most photographers in their everyday practice. I will now make a plunge *in medias res* with a plan to facilitate the intensification of negatives where pure black-and-white pictures are required. We all know the difficulty sometimes of getting sufficient intensity for printing purposes in negatives taken in a weak light. The addition of a little loaf sugar to the developer will, without lengthening the time of exposure, greatly increase the readiness with which this can be accomplished. In printing, a thin, weak negative can be made to give a *very* much better result by covering the frame with a sheet of pale yellow glass (or glass varnished with a spirit varnish in which a little iodine has been dissolved) during exposure to the light. With strongly-silvered paper and printing in the shade, the addition of the yellow glass cover will permit so good a proof being printed as no other scheme that I am aware of could produce; very bad negatives can thus be made useable. If once tried, this plan will hold its own as a silver printer's necessity, as much as the well-known plan of passing the light through a screen of tissue paper or ground glass. To improve the results from a hard negative where the contrasts are too violent the principle is the same in both instances.

How to keep a wet plate clean, sensitive, and certain for five or six hours, or less, with scarcely any extra trouble, is a problem many have found difficult of solution; and "how to do it" is a dodge not to be despised. Of course, there are a variety of plans for getting over this difficulty. The morphia, honey, beer, glycerine, &c., *ad infinitum*, have been suggested and worked, still with more or less uncertainty; perhaps not on account of the preservatives used or faults inherent to the plans, but from want of experience in the use of them. I heard of a gentleman who prepared a wet plate in London, exposed it in Edinburgh, brought it back to London, and developed a good picture perfectly satisfactory in all respects. I think, however, if a plate can be kept good and reliable for five or six hours, it will meet the general requirements of photographers; longer times will indicate the use of dry plates.

Moreover, the long keeping of a wet plate after a certain time diminishes the sensitiveness in an uncertain manner, so as to make proper exposure a matter of chance, rendering it, therefore, practically worthless. Absolute certainty is a *sine qua non*, no matter what kind of plates are used, wet or dry.

Many excellent pictures have been exhibited as the results of different kinds of preservatives; at the same time high encomiums have been lavished on all. Still few, very few, photographers have made these plans regular institutions in their practice, as one would have thought, had they proved reliable. Glycerine is my favourite, and has also been highly praised; but out of a dozen or more photographers who have tried it, and with whom I have discussed its merits, not one had succeeded sufficiently well as to be as certain of it as of an ordinary wet plate, and would never use it if, by any possible chance, the undoctored plate could be made to do. Why should this be so? I believe it is simply because, after success attending one or two trials, failure puts in an appearance without any ostensible cause; this would be with many the reason for shelving the process. Their inability to fix the reason why, and, perhaps, pressure of business too, causes them to throw the new plan over, and fall back on the orthodox, unadulterated wet plate.

The dodge I will now suggest is not new, but I can say, from the experience of many scores of plates, *absolutely certain*, and there is no reason why one photographer should not succeed with it as well as another. There is no necessity for altering baths or in any way interfering with the arrangements of the dark room—an additional bath only required.

After sensitizing the plate in the usual way—using old collodion by preference—immerse the plate a few minutes in a bath composed as follows:—

Glycerine (pure)	1 ounce
Water	6 ounces
Acetic acid	1 ounce
Nitrate of silver	3 drachms

Mix the glycerine, acid, and silver before adding the water and set in the sun for a day or two. Now add the water, and filter. This bath, with occasional filtering and diluting, will remain good for years. The use of pure glycerine is imperative. Lift the plate slowly out of this bath, drain, and place it in the dark slide, the corners of which have been protected with blotting-paper. A piece of moist yellow or black calico, placed on the back of the plate, will complete the arrangement, and the plate so treated will remain good for five or six hours. With a *gradual* but *regular* decrease of sensitiveness a few trials will make one master of the exposure.

If a plate thus prepared is developed within a couple of hours of the sensitizing, no re-intensification will be required, but longer keeping will possibly require it; if it does, add acetic acid freely to the citro, pyro., and silver solution, and in all cases an extra dose of acid to the developer. This acidifying is *very important*, as without it there is much tendency to stains and markings on the film, for which evils the acid is quite a specific.

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* Read at a meeting of the South London Photographic Society

We will now take into consideration No. 2 on the list—the "dodge expedient," by which I mean plans occasionally useful by substituting the sham for the real, the sham invariably holding a subservient place, but assisting to give an effect that will improve the appearance of the finished picture. This, I am aware, is treading on delicate ground; but if it is judiciously used, without any violent outrage on the laws of photographic picture making, more advantage than disadvantage will be the result; for instance, putting in artificial skies, toning down and introducing small accessories photographed from drawings instead of reality, or, as in the case of the picture, "Watching the Lark," where a lump of earth does duty for a large bank, or something more important and different than it was presumably a photograph of.

These sort of dodges are legion, and everyone who dabbles in the black art can, and does at some time or other, make use of them with perfect legitimacy. Some of Mr. Edge's pictures are admirable examples of this kind. Often a good landscape is defective for want of something or other; to give life to the subject, the introduction of a figure or animal photographed from a careful drawing will make good the deficiency, care being taken not to place it too near the foreground.

Again: in some positions it is impossible to obtain a photograph of a building in its entirety. Some small portion is hidden by buildings or other obstructions that quite spoil the general effect of the picture. To overcome this difficulty the "dodge expedient" steps in. Make a drawing very carefully of the part wanted on a very much larger scale than required, in india ink or sepia. Of this take a negative on *precisely* the same scale as the picture to which you intend adding it; then print from both negatives in the usual way. As an example of the accuracy with which this can be done, I last summer had occasion to photograph a building, and added a piece to it from a drawing according to scale as I have just mentioned; and, although upwards of a gross were sold, the addition was never remarked, either by the general public or photographers to whom I showed it for the express purpose of eliciting remarks, although the additional piece measured four inches by one and a-half inch on a 15 by 12 picture.

We will now pass on to No. 3, or "dodge delusive," by which appellation I wish to signify all utter and barefaced photographic impositions, serving no purpose but to mislead, adding no beauty to a picture (the imposition itself being the principal attraction), plunging the believer in photographic truth into an abyss of doubt and a chaos of uncertainty.

There is a class of photographs so palpably absurd (as of large heads on little bodies, &c., &c.) as to explain itself and deceive no one. It is only when this sort of dodge revels in probability that, in my opinion, it should be utterly discountenanced, as more likely to bring discredit than honour upon the art. Cheating the whole and sole desire; deception in its most glaring and useless form; deception the alpha and omega; deception for the sake of deceiving, for no love of the beautiful, for nothing, in fact, save and except to deceive, to get credit for producing from nature something that may pass for an astonishingly clever photograph, and be palmed on the public as such, being at the same time a miserable and hollow sham. This is exemplified in the case of houses on sale or to be let, surrounded by belongings that never existed there, and probably never would; or, in fact, a photograph of any kind when the imitation, no matter what it may be, is deliberately intended to pass current as a genuine and *bona fide* photograph of what is represented, and of what is generally understood to be a true photograph of such places and such things. Of course there are few rules without exceptions, but I think that, unless some great pictorial advantage is to be gained, the "dodge delusive" is utterly inadmissable.

I will not now trespass longer on the time of the meeting, for I think a discussion upon the few matters touched upon in this paper will be of greater advantage to the members generally.

ON SOME NEW DOUBLE SALTS OF IODINE AND BROMINE SOLUBLE IN ABSOLUTE ALCOHOL AND ETHER.

BY DR. D. VAN MONCKHOVEN.*

The first careful investigations that were made on the solubility of iodides and bromides in a mixture of alcohol and ether, suitable for collodion, were those undertaken by Dr. Hermann Vogel, of Berlin, in 1866. After him, M. Carey Lea, the celebrated American chemist, devoted attention to the matter, and was the first clearly to establish the fact, already known to many operators, that if a mixture of iodides and bromides, such as used in collodion, is triturated in a mortar with diluted alcohol, these salts are dissolved; whereas, if treated separately, especially if the iodide of potassium has been employed, they will be found to be insoluble. The reason of this we shall see presently.

M. Meynier, of Marseilles, compounded a mixture made up of equal quantities of the iodide of cadmium, iodide of sodium, and bromide of cadmium. The result was stated to be a crystalline product; but this could not by any means have been the fact, for although, as will be shown further on, iodide of cadmium forms with iodide of sodium a crystalline compound, this is not in any way the case when the bromide of cadmium comes to be added; and if M. Meynier observed any crystals, they were those of the double iodide of sodium and cadmium, or of the bromide of cadmium alone, but certainly not those of the three salts in combination.

At a later period M. Meynier introduced the mixture into commerce; unfortunately, iodide of sodium, alone or combined with other iodides, yields almost invariably a collodion giving hard pictures, and becoming rapidly decomposed, For these reasons, doubtless, the *Sel Meynier* was not generally adopted.

We will now return to M. Carey Lea's observations, to the effect that iodide of potassium, although almost absolutely insoluble in ether or alcohol alone, becomes soluble if triturated in a mortar with iodide of cadmium. The small quantity of iodide of potassium that the liquid dissolves combines at once with the iodide of cadmium, and goes to form a very soluble double salt; a further proportion of the iodide of potassium, thereupon becoming dissolved, is subjected to the same transformation, and so the action goes on until the iodides have been entirely dissolved, that of cadmium having been somewhat in excess. It was this observation that suggested to me the feasibility of preparing in a direct way double crystallized iodides and bromides, soluble in collodion, without having recourse to the tedious operation of trituration. The salts I have prepared, and of which specimens are now in the hands of members of the Society, I will now describe.

Iodide of Potassium-Cadmium† (KI, CdI) equivalent = 347.

This iodide is obtained by accurately weighing 182 grammes of well-dried iodide of cadmium and 165 grammes of iodide of potassium, introducing the same into 300 grammes of warm water, filtering the liquid, and allowing the compound to crystallize out. Or, another method is to introduce into a flask half a kilogramme of granulated cadmium, 1 kilogramme of iodide of potassium, 764 grammes of bi-sublimated iodine, and 2 litres of water. The iodine is dissolved by the iodide of potassium, which, in contact with the cadmium, becomes transformed in a few days into a double iodide of cadmium and potassium, a circumstance known by the perfect decolouration of the liquid. The operation must be carried on without heating the liquid, otherwise a yellow insoluble compound is formed, containing a large amount of iodine, which I have not yet studied. The liquid, when filtered and evaporated, leaves behind some white crystals of perfectly pure double iodide of potassium and cadmium, possessing the following properties.

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* Read before the Vienna Photographic Society.

† These double salts of cadmium are already known in pure chemistry, but not yet in photography; they contain probably two equivalents of water.

It is more soluble in water than the iodides of cadmium or potassium, inasmuch as one gramme of water dissolves three grammes of the double iodide; it is more soluble than iodide of cadmium alone in absolute alcohol, when supplemented even by an equal volume of absolute ether. According to the law of Berthollet, the iodide of potassium, which is almost insoluble, should be precipitated in a mixture of alcohol and ether; but this action does not take place, and the iodide in question may, therefore, be considered of intrinsic value in photography. Introduced into collodion it is immediately dissolved, imparting a golden tint to the liquid; it does not thicken the collodion like the iodide of cadmium, neither does it impart a reddish tint at the end of a few days, as is the case with iodide of potassium.

Neither the iodide of potassium nor of cadmium attract moisture from the atmosphere, whereas a combination of the two iodides will resolve itself into a liquid state in a moist locality, though not in one moderately dry. It is necessary, therefore, to preserve the double iodide in stoppered bottles; the salt keeps well without becoming yellow like iodide of ammonium, and may be heated without being decomposed. At the melting point of tin it fuses into a white mass.

Iodide of Cadmium and Sodium (Na I, Cd I = 331).

This is prepared by dissolving in water 182 grammes of iodide of cadmium and 149 grammes of iodide of sodium, filtering and evaporating the liquid. It crystallizes, with more difficulty than the double salt of potassium, in long deliquescent needles. Very soluble in absolute ether and alcohol, it renders the collodion more fluid and thinner than the iodide of sodium alone. Its employment in collodion presents no advantages.

Iodide of Cadmium and Ammonium (Az H^4 I, Cd I) = 326.

This double salt is prepared by dissolving in warm water 144 grammes of iodide of ammonium and 182 grammes of iodide of cadmium, filtering and evaporating the solution. It crystallizes much more readily than the double salt of sodium, but less so than that of potassium. The compound may be preserved in air without alteration, and is easily soluble in absolute alcohol and ether. It renders the collodion limpid, but not to such a degree as the double salt of sodium, and may be employed with advantage with a guncotton yielding a thick solution. Its preparation is exceedingly simple, and its employment in photography will be found very useful.

Double Iodide of Ethylammine and Cadmium.

The properties of this salt resemble in every way those of the ammonium salt. It crystallizes with difficulty.

Bromide of Potassium and Cadmium (K Br, Cd Br).

This salt is easily obtained by dissolving in water one equivalent of bromide of cadmium[*] (Cd Br 4 4.0), say 172 grammes, and one equivalent of bromide of potassium 119 grammes, and evaporating the solution until crystals are formed. A very fine crystalline compound is easily secured; unalterable in air, but very soluble in water. If, however, an attempt is made to dissolve it in ether and alcohol, it obeys the law of Berthollet, the bromide of potassium being rapidly separated and precipitated. A very characteristic difference between this salt and the double iodide of potassium and cadmium is thus afforded, the latter dissolving perfectly in ether and alcohol. As will be seen, therefore, this bromide cannot be employed in photography.

Bromide of Cadmium and Sodium (Na Br Cd Br) = 239.

This compound is obtained, like the preceding, in white crystals, its preparation being easy. It is exceedingly soluble in absolute alcohol and ether, and its employment, in conjunction with iodide of cadmium, and of the double iodide of cadmium and ammonium, furnishes an excellent collodion, permitting the use of a large proportion of bromide. But, as soon as the smallest quantity of the salt is introduced into a collodion containing iodide of potassium and cadmium, bromide of potassium is almost immediately precipitated.

Bromide of Ammonium-Cadmium (Az H_4 Br Cd Br) = 234.

The method of preparing this salt is the same as the preceding, its properties being such as to render it of great value in photography for all new bromide of silver collodions, such as are just now in vogue. In the first place, it crystallizes admirably, and with the greatest facility, keeping sound in the open air without attracting moisture; but its most precious quality is that of dissolving copiously in alcohol and ether, and consequently in collodion, without the trouble of trituration in a mortar with alcohol, or, what is worse, reducing it to a very fine powder.

The bromides soluble in collodion are very rare, and those which do dissolve are very slowly acted upon, with the exception of the bromide of cadmium. This latter, however, renders the collodion so thick and gelatinous that its use in large quantities is impossible; on the other hand, the double bromide of ammonium and cadmium is infinitely more soluble, and does not thicken the collodion in any way. Its employment will therefore soon be very extended; it must not, however, be added to collodion containing iodide of potassium and cadmium, as otherwise the liquid will become turbid, and bromide of potassium is precipitated. But with the other iodides, and especially by itself, its employment in collodion is excellent.

Bromide of Ethylammine and Cadmium.

This salt crystallizes with difficulty; it is very soluble in alcohol and ether, and does not thicken the collodion. In collodion its employment is very advantageous, permitting the liquid to be employed two hours after preparation.

In conclusion, I would call special attention to the eminent properties of the double iodide of potassium and cadmium, which is so exceedingly suitable for the preparation of good collodions that its employment ought, indeed, to become universal. It is very true that but a single bromine salt can be used in conjunction with it—that of cadmium, namely—for, strange to say, nearly all bromides (sodium, ammonium, &c.), when placed in contact with the double compound in question, have the effect of bringing about the precipitation of bromide of potassium by double decomposition. The reason of this I am unable to give, and no chemist has yet been able to account for the fact.

Besides the iodide salt just mentioned, the double bromide of ammonium and cadmium is a compound full of promise, for, as I have already stated, it does not interfere in any way with the consistence of the collodion to which it is added, like bromide of cadmium, and, moreover, its solubility in that liquid is very great, and its production easy of accomplishment.

MR. E. EDWARDS' PHOTO-MECHANICAL PRINTING PATENT.

AT the commencement of our present volume we noticed some examples of a photo-mechanical printing process, possessing fair promise, which had just been patented by Mr. Ernest Edwards. From the specification now accessible to the public at the Patent Office the process appears to be analogous to the class known on the Continent as "lichtdruck," and for which we have proposed the name of *photo-collography*, of which Albert's is the most successful process in practical operation.

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[*] The equivalent of bromide of cadmium is Cd Br, 4 HO, and not Cd Br, as all photographic manuals assert. Its weight is, therefore, 172 and not 163.

The novelties in Mr. Edwards' operations seem to consist in a method of hardening the film of gelatine by means of alum, in applying the ink by means of rollers or dabbers of india-rubber, and in using, as an aid to perfect pressure, a counter-mould of the image in intaglio on the gelatine. He also uses vertical pressure, instead of a lithographic press, as we suggested in these pages should be done some time ago. None of these modes of working occur, we have reason to believe, in Herr Albert's method. In the view of this gentleman's printing establishment, which we shall present next week to our readers, it will be seen that the ordinary lithographic roller and lithographic press are employed. How far Mr. Edwards' method leads to success we cannot say; but it would seem that Herr Albert's undoubted success depends on other causes. The specification is as follows:—

This invention relates to the method of printing which is based on the principle that when a suitable surface is coated with bichromated gelatine and an image obtained by light, the parts so acted on by light refuse to absorb water, but take greasy ink; those that have not been acted on by light, and remain unaltered, absorb water and refuse the ink; and those that have been partly acted on by light partly absorb the water and partly refuse the ink.

The difficulties that have been met with in carrying this principle into practice have been the obtaining of a surface of gelatine that would bear the requisite pressure and strain in the inking and in the pulling of the proofs, and that would allow any number of proofs to be pulled without showing deterioration. Further, in obtaining freedom from grain; further, in obtaining firmness of lines; and further, in obtaining depth and vigour in the shadows of the prints.

Now this invention relates to improved modes of obtaining such printing surfaces, and to improved modes of printing therefrom, whereby the difficulties referred to are overcome, and consists—

First. Of a method of hardening the gelatine film previous to the image being obtained on it, whereby firmness of line and freedom from all grain is obtained, and an unlimited number of impressions may be printed from one plate without any loss of quality.

Second. Of a method of inking, both as regards the description of roller and composition of the ink, whereby the risk of tearing the gelatine film by the use of the ordinary ink and rollers is got rid of.

Third. Of a method of pulling the proofs, whereby a very small amount of pressure is required, and the breakage of plates is avoided.

Fourth. Of a method of obtaining depth and vigour in the shadows, and of obtaining prints of more than one tint from the same plate.

Fifth. Of a method of obtaining prints with margins so as not to require subsequent mounting.

Sixth. Of the general systems of operations in the manner and for purposes described.

In carrying these my improvements into effect I proceed as follows:—

Upon a surface of metal, wood, stone, glass, porcelain, slate, or enamel, clean and free from grease, I place a layer of gelatine, gum, albumen, fibrine, or compounds of those substances, one or more of them hardened and rendered insoluble in water by means of ammonia alum and other varieties of alum, chrome-alum, tannin, chlorine, or any of the other substances that are known to have the property of tending to produce insolubility of gelatine, gum, albumen, or fibrine. This layer is rendered sensitive to light either during its preparation or subsequently, as printing from a film of bichromated gelatine which has been acted on by light and subsequently moistened has not been found, on account of the nature of such a film, to give satisfactory results, either as regards numbers, or vigour, or firmness of line, besides showing a certain grain.

But gelatine may be rendered hard and insoluble and converted into a very tough and durable substance by treatment with alum and by other means; and I have discovered that after such treatment it still retains its property of being acted on by light, and has, moreover, been converted into a substance which has all the qualities of stability, depth, and firmness necessary for a good printing plate, while the surface has been rendered completely free from grain.

The sensitive layer thus obtained is submitted to the action of light, and washed in water; a second layer of the insoluble gelatine is applied, and the plate is again sensitive to light. After exposure under a negative till all the details appear, the plate is freed from bichromate by washing in water, and is ready for printing; or it may be dried and laid aside for future use.

Where the plate is of glass, light may be allowed to act on the reverse side of it till the image has almost disappeared. Where a few copies only are required to be printed, the first coating may be omitted, or the sensitizing and exposure to light of the first coating may be omitted.

It is not possible to fix the quantity of alum or other substance to be added to the gelatine, as this varies with the sample and description of gelatine used; but it is to be understood that it is to be such a quantity as will render the gelatine film, after being dried, insoluble in boiling water.

When it is desired to print from the plate, it is thoroughly wetted and placed in a press in which the pressure is vertical. I prefer to use an ordinary printing press. The plate having been freed from superfluous moisture, the image appears on the surface of the gelatine in relief and depression, the depressed parts being the shadows and the raised parts the lights. It is necessary to obtain a sufficient amount of pressure in the shadows without much more pressure on the lights, or without so much as to risk the breaking of the plates. To effect this a mould is made by warming a sheet of gutta-percha, placing it on the plate, and pulling the press, the mould being so arranged that it falls each time exactly in the same place. The plate may, as an additional precaution against breakage, be bedded in gutta-percha. Other materials besides gutta-percha may be used, such as leather, india-rubber, paper, and paper pulp.

The mould having been obtained and the pressure adjusted, the plate has to be inked. In ordinary lithography there is a great adhesion to the plate, both from the ink and the roller, which, when applied to this process, results in the tearing up of the gelatine film. To obviate this, and also to obtain a finer surface, I use rollers or dabbers made of india-rubber, and I use lithographic ink thinned down with tallow and olive or other oil, avoiding as far as possible the use of lithographic varnish or boiled oil.

The plate having been properly inked, a piece of paper is placed on it, the mould or matrix laid on the top, and the whole submitted to pressure for a sufficient time to allow the paper to receive the impression. Paper—either plain, enamelled, or albuminized—may be used, and the prints after printing may be albuminized, varnished, or otherwise enamelled.

When a plate is inked up, ift he ink has been mixed too stiff, it will only adhere to the deepest shadows, and requires the addition of a thinning agent before it will adhere to the half-tones. I take advantage of this fact, and procure prints of one or more tints from one plate, and obtain greater depth in the shadows as follows:—Two or more inks are prepared of different degrees of stiffness, and of the same or different colours. The stiffest is first applied, which adheres only to the deepest shadows; the next stiffest is then rolled in, which does not affect the ink already on the plate, but which also adheres to the half-tones, and so on. In like manner a ground may be prepared in colours by chromo-lithography, and an impression placed on this, or the reverse; or several plates may be used for printing from, as in lithography.

Where it is desired to obtain prints with margins which shall not require subsequent mounting, a mask—preferably of thin paper—is cut, having an opening the size of the finished prints. After inking, this mask is laid on the plate, and the paper or mount on which the impression is to be made placed over it. The press is pulled, and the print has the required margin. The mask is then removed, and the plate is again ready for inking.

Prints on paper in suitable pigments may also be used for enamelling and burning-in in the ordinary way in which prints on paper are used for those purposes.

DIRECTIONS FOR REGISTERING DESIGNS FOR ARTICLES OF UTILITY.*

Persons proposing to register a design must take, send, *or post* to the Designs Office, No. 1, Whitehall, S.W., two exactly similar drawings or prints (photographs will also answer) thereof, marked with letters, figures, or colours, to be referred to as hereinafter mentioned, together with the following particulars:—(i.) The title of the design; (ii.) the name and address of the proprietor or proprietors, or the title of the firm under which he or they may be trading, together with their place of abode, or place of carrying on business, distinctly written or printed; (iii.) a statement in the following form, viz., "The purpose of utility to which the shape or configuration of (the new parts of) this design has reference is," &c.; (iv.) a description to render the same intelligible, distinguishing the several parts of the design by reference to letters, figures, or colours. (No description of the parts of the drawings which are old will be admitted, except such as may be absolutely necessary to render the purpose of utility of the shape of the new parts intelligible.) (v.) A short and distinct statement of such part or parts (if any) as shall not be new or original as regards the shape or configuration thereof, which must be in the following form, viz. (if the whole design is new state), "The whole of this design is new in so far as the shape and configuration thereof." (If there are any old parts state), "The parts of this design which are not new or original as regards the shape or configuration thereof are those marked (A, B, C, &c.), or coloured (blue, green, &c.)"

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* *The Stationer.*

Note.—The above particulars must be given in the aforesaid order under their several heads, and in distinct and separate paragraphs, which must be strictly confined to what is here required to be contained in each.

Specimen Form.

(Title of the Design.)

(Name of the Proprietor.)

(Address of the Proprietor.)

(The drawing to be inserted here.)

(Statement of Utility.)

The purpose of utility to which the shape or configuration of (the new parts of) this design has reference is ....

(Description.)

(If the whole design is new state—)

The whole of this design is new in so far as regards the shape and configuration thereof.

(If there are any old parts state—)

The parts of this design which are not new or original as regards the shape or configuration thereof are those marked, &c., &c.

6 in. 4 in.

6 in. 4 in.

Maximum size, 24 inches.

Maximum size, 15 inches.

Each drawing or print, together with the whole of the above particulars, must be drawn, written, or printed on one side of a sheet of paper or parchment not exceeding in size 24 in. by 15 in., though it may be of any less size; and on one of the said sheets, on the same side on which are the said drawings and particulars, there must be left two blank spaces, each of the size of 6 in. by 4 in., for the certificates of registration.

PHOTO-MECHANICAL PRINTING PROCESSES.

BY LIEUT. J. WATERHOUSE, R.A.

Photo-Lithography in Austria.

The following process of photo-lithography is extensively used in the Military Geographical Institute in Vienna, and gives very good results:—

Ordinary albuminized paper is floated for five minutes on a mixture of—

A.—Finest gum arabic	2½	parts
Water	35	,,
B.—Bichromate of potash	1	part
Water	30	parts.

The gum arabic and bichromate of potash are dissolved separately and filtered, forming solutions A and B; they are then mixed and poured into a large dish.

When the paper is dry, all the gloss will be found to have disappeared. It is exposed under a negative for about five minutes, more or less, according to the light, quality of the negative, &c., and then inked on a stone which has received a very thin coating of an ink composed of—

Marseilles soap (oil)	9	parts
Yellow wax	12	,,
Tallow	6	,,
Venice turpentine	1½	,,
Lithographic ink (composed of middle varnish 8, lampblack 6)	14	,,

To prepare it—

Take the soap, cut it into bits, and put it in an iron pot; when melted, put in the wax, then the tallow; when they are all melted, pour out the mixture on to a slab of stone, and grind it well; then put it back in the pot and add the Venice turpentine; stir it well in, and then add the lithographic ink.

The coating of ink is very pale, and scarcely perceptible on the paper. The inked proof is then washed in cold water with a soft sponge; the ink leaves it readily, and when it is quite clean, it is well washed in clear water, and placed between sheets of blotting-paper to dry. While just damp, it is transferred to stone with heavy pressure; the stone is then washed and gummed, and charged up with soft ink and a sponge. The process seemed practical, and I saw some very good results by it, but noticed a tendency to enlargement of the lines. This, however, may have been due to the use of such heavy pressure, or to the ink being too soft. I was told that a great many copies can be pulled.

Commercial Photo-Lithography in Vienna.

Photo-lithography is not so much practised at Vienna as in Berlin, but there are two photo-lithographers here who have produced some very excellent work, the one in line the other in half-tone.

Herr Leth, of Walfisch Gasse, has done some exceedingly fine copies of old drawings, woodcuts, and etchings on copper by Albert Durer. Some of these copies possess a sharpness and clearness not often seen in photo-lithographs. He very kindly gave me some details of his process, which is for the most part the same as that usually practised, with the exception that he prepares his paper with the following mixture:—

Gum arabic	½	part	or 1 gelatine
Gelatine	½	,,	
Bichromate of potash	3	parts	
Water	48	,,	

I saw several of his negatives; they seemed very weak, which was owing in great measure to the colour and age of the originals; notwithstanding this, the photo-lithographic copies were very good indeed, and Herr Leth told me he attributed it to the excess of bichromate of potash, which caused the parts acted upon by light to be acted upon so strongly that they would stand the great amount of scrubbing necessary to clear up the white ground. He is now chiefly occupied with a process for enamelling porcelain, &c., and applying it to the ornamentation of china-ware, &c.

Herr Reiffenstein, of the firm of Reiffenstein and Roesch, lithographers of Rothen Stern Gasse, has occupied himself very much with photo-lithography in half-tones, and has produced some very good results. He works in an entirely different manner from Leth, and, I believe, his process very much resembles that of Marie at Paris.

He employs asphaltum dissolved in turpentine as the sensitive coating of his stones, and for the solvent, after exposure, turpentine, to which a little ether is added. He prints direct on to the stone. I did not see anything of the process, but saw a finished stone ready for printing, which had every detail on it with the greatest delicacy.

I have to thank Herr Reiffenstein for the information he kindly gave me, and for some fine specimens of his process.

MANIPULATIONS IN JOHNSON'S CARBON PROCESS.*

VI.—Inverted Pictures on Canvas, Oil Cloth, etc.

Canvas, properly prepared, may be substituted for the opal plate; but, being liable to bend and buckle, it requires the support of a plate of glass or other rigid surface during the mounting of the exposed pigment paper, when the usual manipulations may be performed.

This is on the supposition that unmounted canvas be used. When the canvas is put upon a stretcher, we have only to wet the pigment paper and lay it upon the stretched canvas, upon which water has been poured, and which then acts as a plate.

The development is effected by floating the stretcher upon the water face downwards, and aiding the development by moving the canvas without wetting the back.

VII.—Inverted Pictures on Prepared Paper.

All the manipulations we have described are applicable to paper, which, like the canvas, must, of course, have a plate of metal or glass under it to admit of the use of the india-rubber scraper. The transfer and pigment papers are immersed in water, a plate of glass having previously been laid on the bottom of the dish. When the pigment paper has expanded and become flat, the prepared side of the transfer paper and the gelatine side of the pigment paper are brought together and laid over the plate, which is then raised with the left hand, the thumb holding the papers in their places; the scraper is then applied as usual. Or the plate of glass is placed in a sloping position at the edge of the dish, on the right hand side of the operator, and the transfer and pigment papers are floated in the water until limp, straight, and expanded to their full dimensions. The prepared faces are then brought together under water, and the papers dragged by a rapid motion upon the surface of the sloping plate. The scraper is then rapidly applied from left to right, from below upwards, at once removing the superfluous water, and, with it, the air. Or the wetted transfer paper is laid first upon a plate of glass, and the wetted pigment paper laid upon it with the scraper, as upon the plate alone. In all these cases the pairs of paper, however brought together, may be hung up on a string by means of American clips until partially dry, when the development may be proceeded with; or the pairs may be piled, with blotting-pads intervening.

The prints are then washed until fully developed, commencing with the first pair, and are finished by being soaked in cold water, with or without the immersion in alum water (13). The prints must then be hung up to dry, when they are ready for mounting.

The transfer paper here spoken of for inverted pictures may be that sold by the Autotype Company, for use in their process for producing non-inverted pictures; and nothing better can be found, unless, indeed, we except ordinary albuminized paper; which, when rendered insoluble by means of heat or proof spirit, is impermeable to air and water, or very nearly so, and answers admirably to receive the image when used as the permanent support in the new Autotype process. The best way of preparing it in the impermeable state is to roll up the sheets alternately with white blotting paper, to fold the roll in flannel, and place it in a potatoe steamer, covering it with the lid. When the water boils freely, the albumen is coagulated and rendered perfectly insoluble, and fit to be used as described. Albumen paper, as has been shown, was used in an early stage of the carbon process by Swan and others; but they believed that the adhesion between the surfaces was necessary before the albumen became insoluble.

Proceedings of Societies.

The Photographic Society of London.

The last monthly meeting of the session was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, the 14th instant, Mr. J. Glaisher, F.R.S., in the chair.

The minutes of a previous meeting having been read and confirmed, the following gentlemen were duly elected members of the Society:—Messrs. R. Brown, F.C.S. (Bengal Medical Service), A. L. Henderson, Noel E. Fitch, C. B. Prœtorius, A. F. Fisk, and Capt. H. E. White.

Two prints from Liverpool dry plates were exhibited by Dr. Mann. One was from a plate which had been kept nineteen months before exposure, and the other had, before development, been sponged roughly by accident. Notwithstanding these circumstances, the plates had yielded respectable negatives.

The Chairman exhibited some silver prints of ferns, which had been produced twenty years ago, but were still unfaded.

Mr. H. Baden Pritchard, of the Royal Arsenal, exhibited a large number of very fine carbon prints by Johnson's process, which, he stated, had now been adopted at the Arsenal exclusively, silver printing having been abandoned. They had produced several thousands with complete success and satisfaction. The examples on the table were forty or fifty of that day's produce taken at random.

Mr. Dallas exhibited some examples of photo-engraving.

The Secretary then read the letter from Mr. Paul Pretsch.

To the Secretary of the Photographic Society of London.

21, Himmelpfortgasse, Vienna,
April, 1870.

Sir,—I do not often see an English paper, but I lately received a communication from Mr. Schrank pointing my attention to a letter from the pen of Mr. Duncan C. Dallas, containing statements relative to my photo-galvanographic process and its results, which was inserted in a recent number of the Photographic News. As I perceive that the matter has come under the official notice of your Society, I beg you will allow me to make my reply.

Mr. Dallas was formerly my partner, having the full management of the concern, whilst I undertook the practical working of the process. About one year after the formation of the Photo-galvanographic Company my partners induced Mr. Dallas, for a consideration paid to him, to leave the establishment altogether. I did not even then become sole manager, for there were others associated with me whose names need not now be mentioned; but at the end of a further period of about six months the Company was broken up, and I was left to do what I could alone.

I have now in my possession a complete series of specimens, in all one hundred and fifty-five subjects, some of which were executed in Mr. Dallas's time, and many of them, especially those for surface printing, afterwards. I will now proceed to give you a description of them, for those left in my hands are but single impressions, and I have no duplicates which I could send to England. Of the total number already stated, thirty-nine are printed from blocks, and a hundred and sixteen from copper plates. St. Laurent's Church was taken twice, once by mould from the dry plate, and the other was done from the moist plate itself by electrotype. The latter process was not, however, found to answer well in practice, for the plates were sometimes injured by the copper solution. Four specimens are printed from stone by transfer from the copper plate, but I have not a favourable opinion of this method of working. Twenty-two are left entirely untouched, to show the capabilities of the process without any hand labour; there are also three untouched, and three of the same subject touched, to show the points of difference between them. Besides these, there are sixty-six plates more or less touched, many of them being very fine, two copies of a group of ladies, treated in different ways, and two copies of the poesie painting in Rome, untouched; three copies of a portrait of Prince Albert, one with pencilled marks done by himself the last time I had the honour of an interview with his Royal Highness at Windsor, shortly before his death, the second finished by the engraver, and the third taken from the plate whilst in the untouched condition; two copies of a drawing by Leonardo da Vinci, one touched and the other left in the original condition, which, in this instance, showed by far the best result; copies of a painting and two drawings by Raphael; one by Albrecht Durer, and a large picture of the Venus de Milo, taken from the statue in Paris, all of them untouched. But the two nicest untouched specimens are a drawing by George Richmond, done for Mr. Hogarth, of the Haymarket (who would, I suppose, have no objection to show it to any one calling upon him for the purpose of making an inspection), and another by Raphael, which well attests the excellence of the method when carried out in its integrity.

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* Continued from p. 273.

In addition to these I possess thirty-nine copies printed in letter press from blocks. They are not touched at all, and are arranged in order, for the purpose of showing the progressive development of this method, the last results (ten or more) being, I consider, quite perfect.

My process differs from Mr. Fox Talbot's in the following particulars:—*He made no use of the plate being raised*, but traversed it by etching and similar processes into a plate to print from.

I will admit that the application of my process to calico-printing has not, up to the present time, proved successful, and I do not think it will answer for this purpose.

Councillor Auer, who is now dead, was Director of the Imperial Printing Office in Vienna, whilst I was one of the managers or foremen (factor), and there were in all about nine hundred workpeople employed. Mr. Dallas's assertion that Councillor Auer was "manager" of the Vienna establishment is incorrect, for he held a higher positon—that of Director or Superintendent—and always consulted me, and availed himself of my assistance when any experiments had to be made in this branch. I have been ill for a long time, and consequently been compelled to remain in retirement; but all the specimens I have in my possession are freely open to the inspection of any member of your Society who may be able and willing to examine them. I confess that it is a long journey to Vienna, but the prints cannot be sent to England for the reason already stated; if, however, you may be pleased to depute any one possessing the requisite knowledge of art to come and examine my specimens and report upon them, the entire series (155 prints) shall be placed on view at this address within twenty-four hours of my receiving notice of such proposed visit, and I venture to hope that my expectations of receiving an honourable call may soon be realised. I am, &c.,

Paul Pretsch.

The Secretary then added that he had obtained from Mr. De la Rue some examples of Mr. Pretsch's photo-galvanographic plates. One, a very charming picture of Bolton Castle, belonged to Dr. Muller, who, with a full technical knowledge of the subject, believed the plate to be untouched. Several other examples were on the table.

Some of Mr. Pretsch's copper-plates were exhibited by Dr. Diamond, and some by the President.

The Chairman said that when Paul Pretsch was in England he encouraged him to persevere; and, to test his work, he gave him some large negatives of ferns to engrave. Two of the plates were on the table, and he was satisfied that they were untouched, as were many others, whilst some were distinctly acknowledged to be retouched. One of the council had remarked that he had seen a plate produced at the Ordnance Survey Office at Southampton by Paul Pretsch's process still more perfect than any of these.

Mr. P. Le Neve Foster reiterated his conviction that no plate was ever issued by Mr. Pretsch, whilst with the Photo-galvano-graphic Company, which was untouched by skilled hand-labour; and further, that the process was incapable of producing presentable work without retouching. He had seen the books, and seen the sums paid the engraver who retouched the plates, and could, if necessary, bring him forward. He said this without any personal feeling, but simply because, for the sake of legitimate progress, it was desirable that the truth should be stated as to what had actually been done.

The Chairman said if he had understood before that Mr. Foster limited his remarks to the time Mr. Pretsch was with the Company he should not have entered into any discussion of the question.

Mr. Dallas showed some examples of plates in touched and untouched condition, and stated that the examples exhibited by Mr. Spiller marked "untouched" were, to his personal knowledge, worked upon by an engraver.

In answer to the Chairman, Mr. Dallas stated that this took place whilst he was with the Company, and to his own knowledge.

After some further conversation on the subject,

The Secretary read an abstract of a paper by Mr. Jessen on the "Lichtdruck" Process, and exhibited many fine specimens.

After some conversation,

The Chairman announced that the next session would be opened with an exhibition, as in the last few years, and he hoped that members would have a successful summer campaign, the results of which would be seen in the exhibition.

The proceedings then terminated.

South London Photographic Society.

The ordinary meeting of this Society was held in the City of London College on the 9th inst., the Rev. F. F. Statham, M.A., F.G.S., occupying the chair.

The minutes of the previous meeting having been read, arrangements were made for summer out-of-doors meeting.

A paper on "Dodges" (see page 281), by Mr. Dunmore, was read by the president, who, on concluding, commented upon the excellent arrangement of the topics in the paper. Those "dodges" described under the first class did not quite deserve a name which implied any impropriety in their practice; they were rather valuable experiences—short cuts to success not known to photographers generally. Every experienced man would meet with success in his own peculiar way; such a man as Sir Edwin Landseer could put a whole school of artists up to dodges. The "dodge expedient" was often a very praiseworthy one, when applied, for example, in printing in clouds or animals obtained from nature; but it was desirable that they should all be obtained from nature. For this purpose a variety of figure negatives in various positions might be kept in stock. Views were often spoiled by the artists by posing themselves in them; he had seen some views in the Isle of Wight in almost each of which the photographer was himself to be seen. He might, however, introduce himself in the view if he put on such a disguise or costume as suited the character of the scene—as a fisherman, for example.

Mr. Foxlee indorsed the statements of Mr. Dunmore, who had quite exhausted the subject.

Mr. Croughton, referring to the advantages of using a yellow glass in front of a weak negative, spoke of the influence this exercised upon the tone of the picture.

Mr. Taylor said that he had satisfied himself, by direct experiments, that the colour of the print was considerably modified by the colour of the light that effected the change. His experiments were tried with pieces of coloured glass, and some of them had been communicated to the Society in a paper read by him some time ago.

Mr. Hart suggested that the different tints obtained under different colours of glass were occasioned by some of them transmitting more heat than others; heat has an influence on the colour of the print.

Mr. Taylor, referring to glycerine plates, said he had found the longer these plates were kept the more intensity they gave. He had not, however, kept them for any great length of time, the longest being for seven or eight hours, when, on one occasion, he prepared some plates in the morning and went to Potter's Bar to call on Mr Roger Fenton, who, he found, was then lying dead. He developed these plates after tea-time, and found them to yield very intense negatives. He invariably succeeded with this process when he used an old and red collodion.

Mr. Foxlee, referring to the addition of loaf sugar to the developer, had tried it, but found that it involved a somewhat longer exposure.

Mr. Henderson spoke of the peculiar kind of mottling that sometimes resulted from the addition of gelatine to the developer. In consequence of this he had discontinued its use.

Mr. Croughton, referring to printing, did not consider the person as worthy of the name of a photographic printer who merely placed the paper in the frame under a negative, and removed it when done. Skilful printing required the careful supervision of the attendant, who should mask certain parts, and direct the light with skill, so as to produce a really fine result. He spoke of the advantage to be gained in artistic effect by lowering the tone of the hands, so as to secure for the face the primary attention of the spectator.

After a unanimous vote of thanks to Mr. Dunmore,

It was announced that an out-door meeting of the Society would be held in Kew Gardens on Saturday, August 27th; and that, in accordance with the kind invitation of the President, the members would meet at his house on Saturday, the 30th July, at 5 o'clock.

The proceedings then terminated.

Talk in the Studio.

Photography and Physiology.—Dr. Duchenne, whose extensive applications of photography to the illustration of anatomy and physiology are well-known, has just presented to the French Academy of Medicine an icono-photograph album, containing numerous figures of the appearances presented by sections of the nervous centres. He has, we understand, obtained excellent results from sections of the great sympathetic nerve, the spinal ganglia, the spinal cord, and of the medulla oblongata when magnified from eight to five hundred times. The idea was suggested some years ago by Dr. Duchenne, but it was not carried out because of the want of permanency in photographs obtained in the ordinary method. He now produces them on stone by a process he terms photo-autography. He finds that the results of his experiment and photographs confirm the substantial accuracy of the drawings made by Dr. Lockhart Clarke on the central parts of the nervous system, and especially upon the medulla oblongata. In his later experiments Dr. Duchenne has adopted Dr. Clarke's mode of preparation with chromic acid and carmine. He states that certain micrographic details come out with wonderful clearness in the photographs, and that by this means some important additions may be made to our knowledge. The subject is in good hands.

A Frame for Double Printing.—We have seen the frame, by Mr. B. J. Edwards, for rendering double printing operations certain and easy, and also the results in silver and carbon produced. Nothing can be more simple to use, nothing more certain in operation. We shall enter into details in our next.

The Woodbury Process.—We announced last week that Mr. Woodbury's patent for printing, which was sold at the Auction Mart by order of the Court of Chancery, had been purchased by Mr. Vincent Brooks, of Gate Street, Lincoln's Inn Fields. We learn since that the purchase is on behalf of a new company, who will proceed to work the process.

Photo-lithography.—Referring to an answer in our last, to the effect that we did not know of any one working photo-lithography commercially in London, Messrs. Provost and Co., of Henrietta Street, inform us that they undertake such work, and send for our inspection a work issued for private circulation, in which very good results are obtained in line, facsimiles of the original drawings.

The Late Charles Dickens.—It will interest our readers, in the appreciation of a common and deeply-felt loss to every English household, to know that the London Stereoscopic Company is publishing the last produced photograph of Charles Dickens, an admirable likeness of him, as we had the happiness, now a sad recollection, less than two months ago, to see and meet him.

To Correspondents.

TO AGENTS.—With the next number of the Photographic News an example of Albert's New Photo-mechanical Printing Process will be presented. Agents will please give orders for extra copies by Wednesday next.

South Devon.—Various methods are employed to give opacity to the sky in a landscape negative. It may be painted out, and for this purpose some photographers use water colour and some black varnish. Some apply it at the back, and some on the sky itself. Lampblack ground up with size answers very well. The best plan is to apply a mask of paper. Make a print on thin paper, and, without fixing, cut out the sky portion, let it blacken in the light, and then attach it to the face of the negative with india-rubber cement. Tear the sky-line somewhat roughly, and use Indian ink to join carefully.

A Lover of the Art.—It is difficult to answer with any certainty or definiteness questions about exposure. The term "good light" is very indefinite in itself, and the amount of light in different studios, the kind of subject, &c., vary so much that it is very difficult to state an average time of exposure. For a cabinet picture, with a good light and lens, twenty seconds need not be considered a long sitting; but, under many circumstances, we have known half that time sufficient. With the lens you mention, twenty seconds would be long for a card portrait well lighted, but short for a standing cabinet, to do justice to which a somewhat small stop should be used. 2. What toning process do you use with the collodio-chloride paper? Some modes of toning tend to give pinkish lights, which some operators admire. 3. If the iodized paper has been kept too long, fog and stains may arise. Only experience will enable you to distinguish the defects arising from bad or old material from those due to bad manipulation. The discolouration of the whites may arise from the paper, or from the silver bath, or the developing, or from light in the dark room, or want of acid, &c. 4. A silver bath should be prepared and kept for the purpose.

L. S. D.—The precipitation of your gold is due to the use of an impure sample of acetate of soda, which has probably contained carbonate, and it has probably been aided by light. The toning bath should not be kept standing in the light, as that tends to decompose and precipitate it. 2. We have published many articles on transferring collodion prints to paper. You will find a simple and efficient method described in our last Year-Book.

E. H.—You are not under necessity of buying any specific quantity of the carbon tissue. You can obtain whatever quantity you require of the company, and use it without let or hindrance. 2. The company's studio in Rathbone Place is open on certain days—Fridays, we believe—to afford photographers an opportunity of seeing the manipulations. No charge whatever is made. Communicate with the secretary, who will afford you full information.

Troubled.—So far as we understand the case, we have never met with anything of the kind. Are you quite sure that the streaks do arise from intensification, or are they already present in the film, and are only made fully perceptible during the process of intensification? If, as you state, the use of a solution of iodine before intensifying mitigates the evil, it seems probable that the stain is due to imperfect washing away of the silver and developing solution before commencing to intensify. The use of a spongy, porous collodion would, in such case, increase the evil. If you had sent us a print showing the nature of the streak, we could probably have understood better.

J. Tulley.—Thanks. Both portraits are very good. The advantage of lenses of somewhat uniform working powers is decidedly worth having. Yours, also, do the work well.

B. P.—We cannot advise you on the subject. We have already expressed an opinion that the patent is good, and that the manufacture by another is an infringement. In this case one person has laboured and invented, another has purchased his invention; and if a third manufactures for his own profit, without either invention or purchase, he possesses at least a doubtful tenure. Upon the legal part of the question we can say nothing.

R. M. D.—As a rule, a collodion containing salts of cadmium keeps well; but these salts have the disadvantage of rendering the collodion glutinous, whilst alkaline salts tend to render it limpid. For ordinary purposes, a collodion containing two grains of iodide of ammonium, two grains of iodide of cadmium, and one grain of bromide of cadmium to each ounce answers well. It will be ready for use in a few weeks after mixing, and will keep good for six, or even twelve, months. 2. We prefer a thirty-five-grain bath, but great latitude exists in this respect; we have got good pictures with a bath containing not more than twenty grains, and also with one containing fifty grains to the ounce.

J. M. P. (Hartlepool).—We shall have pleasure in giving you advice in these columns on any especial point connected with the proportions, lighting, or other detail having a photographic bearing, of your proposed studio; but we regret that our engagements do not permit us to enter into private correspondence on such subjects.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 616.—*June* 24, 1870.

CONTENTS.

PAGE
Our Presentation Print—Albert-type ... 289
Double Printing made Easy and Certain ... 290
A New Method of Combination Printing. By B. J. Edwards ... 290
A New Artificial Light ... 291
On Durable Sensitive Albuminized Paper. By Fritz Haugk, of Brunswick ... 291
On Renovating Old Dipping Baths. By Dr. Van Monckhoven 292
The "Lichtdruck" Process. By C. F. Jessen ... 292
Double Salts of Iodine and Bromine. By Dr. Van Monckhoven 293

PAGE
The Hypo and Gold Toning Bath ... 294
The "Echo" on Photography ... 294
Enamel Photographs—Burnt-in Photographs. By Prof. J. Towler, M.D. ... 295
Correspondence—The Velocipede for Photographic Tourists—Pretsch and Photo-Galvanography ... 297
Talk in the Studio ... 299
To Correspondents ... 300
Photographs Registered ... 300

OUR PRESENTATION PRINT.—ALBERT-TYPE.

With this number of the Photographic News we present our readers with a second example of Herr Albert's new photo mechanical printing process. As we have from time to time published all information which has transpired in relation to this process, we need not enter into detail here beyond briefly restating the nature of the operations.

In principle the process is, as our readers know, analogous to lithography, but the results very far surpass anything which has ever before been produced by the various photo-lithographic processes, inasmuch as here the great desideratum of perfect half-tone, so long vainly sought in these processes, is secured. The printing surface is a film of bichromated gelatine which has lost its power of absorbing water in the exact ratio of the action of light upon it, and in the exact ratio in which it has lost the property of absorbing water it has acquired the power of receiving a fatty ink, applied by means of a roller, so that the printing operations closely resemble those of ordinary lithography.

Beyond the details published in our last volume no authentic information as to Herr Albert's process has been published. In Mr. Jessen's paper, read before the Photographic Society, which will be found on another page, it would seem that the "Lichtdruck" process, as practised in Berlin, involves the use of a more complicated formula than that of Herr Albert, as given in the specification of his French patent. The pamphlet by Herr Leontytsch on "Albert-type" repeats that formula, and adds points of detail. It may be interesting to give a resumé of his statement of the process in the same number with which our specimen print is issued.

The thick plate of glass, being well cleaned, is coated with the following:—

No. 1.—Water	... ...	80 parts
Good dry glue	... ...	10 ,,
No. 2.—Water	... ...	40 parts
Powdered bichromate of potash		3 ,,

These are mixed warm, and filtered through cotton wool immediately before use. The plate is also slightly warmed before coating. The plate must be dried by heat, and the film should be at least one line in thickness. Five or six hours at a temperature of 90° to 100° Fah. will dry the plates sufficiently. They are then exposed to the action of light for a quarter or half an hour, until a light brown tint is produced.

The plate is now put into a water bath, which removes the soluble chromate. It is then dried, to receive the second coating. This latter consists of gelatine, white of egg, and bichromate of potash, an ounce of gelatine being dissolved in 12 ounces of distilled water, and 3 drachms of bichromate in another quantity of 5 ounces of water. To the gelatine solution is added 7½ ounces of white of eggs and, after being heated over a spirit flame to 120° to 140° Fah., the bichromate solution, likewise warm, is mixed in, and the whole filtered through cotton wool. The compound is applied in a warm condition to the plate in the same way and with the same precautions as the first solution, the film, however, being only half as thick, and the oven heated to 80° Fah.

After exposure, until every detail in the opaque parts becomes visible at the back, the plate undergoes an operation upon which the whole secret of success is based, and without which it is impossible to produce a serviceable block: it is placed, namely, upside down, and exposed again to light from the reversed side until the highest lights only remain distinguishable. This has the effect of hardening the film throughout, and rendering it firmer and less absorbent of water. Finally, the plate is washed in the dark room to remove any soluble chromate, and placed to dry upon filter paper.

The dried plate, previously to rolling up, is placed for five minutes (face uppermost) in a shallow dish containing a 25 per cent. solution of glycerine in water; it is then fixed up with a suitable backing in a lithographic press, wiped over lightly with a soft sponge moistened with a few drops of linseed oil, and next with another slightly damped in water, after which it is rolled up carefully with an exceedingly soft roller, such as would be used for chalk drawings.

Our print, as will be seen on examination, is on ordinary plain paper, without any preparation or enamel surface, and it is printed with a margin, rendering mounting unnecessary. The subject is the interior of Herr Albert's printing establishment, which will present many points of interest to our readers, and suggest some important conclusions. The extent of the establishment and the number of presses in use indicate the fact that the process has passed from the experimental to the commercial stage, and that facilities exist for extensive production of prints. It will also be evident, to those familiar with such matters, that the operations are analogous to those employed in ordinary lithographic printing. The print will, therefore, to many, possess greater interest than one in which the subject was of a more essentially pictorial character. It will be seen here, however, that the gradation is very perfect, and closely allied to that of the best sun pictures, no trace of grain being apparent. In looking at random through several thousands of examples, we find a very satisfactory uniformity of character; the gradation in all being singularly delicate, and the majority possessing decidedly more vigour than we have usually found in prints produced by any process based on the lithographic principle.

The question has repeatedly been asked, Are these and similar prints produced in a fatty ink, or in a water colour? The answer is, "Unquestionably in a fatty ink." The doubt of this has arisen from the fact that some of the examples issued have been printed upon an enamel-surfaced paper; and this surface being soluble in water, the image has been easily removed by sponging. Those of our readers having any doubt on the subject may easily satisfy themselves by sponging the print we now issue, which will remain uninjured by any fair treatment with clean water.

We regret that we cannot give further authoritative information as to the mode of production. Various articles have been published, and many experiments have been made; but all the examples we have seen have been inferior to those of Herr Albert in various points of technical perfection. Whether the superiority in the latter is due to personal skill, or to some point in the process not yet made public, we cannot state. We believe that Herr Albert still contemplates obtaining a patent in this country, his operations in this direction having been hitherto unfortunately retarded by his protracted illness. At present we can only add that we shall duly lay before our readers the earliest and fullest further information in relation to this important process.

DOUBLE PRINTING MADE EASY AND CERTAIN.

The process of combination printing—that is, of producing one print from several negatives—was reduced to something like a mechanical certainty in the method placed before the Photographic Society, by Mr. Cherrill, at the beginning of last year. The admirable system of registration then described was so simple that any printer of ordinary intelligence and care might easily carry it out. A variety of ingenious plans have also been described in our pages, with the especial aim of printing-in natural backgrounds on portraits taken in the studio. But in all the methods hitherto proposed it has been necessary for the printer to *see* what he was about; to see that the registration marks superposed, or to see that the portions of the picture joined properly. Mr. B. J. Edwards has just patented a printing frame, the object of which is to render double printing easy and certain, and to make the photographer quite independent of sight in securing perfect registration of the different portions of the image, so that it will be quite as easy to produce combination pictures in carbon, as by any of the methods in which the progress of printing is visible to the eye.

The method of effecting this is very easy. The printing-frame resembles in some respects those frames made for printing on opal-glass. The frame consists of two halves; in one of these the negative is placed, and is made fast with a screw. In the other half the paper is placed and made fast, so that it will not move, and cannot readily cause imperfect registration by contraction or expansion. To fix the paper an ingenious but very simple plan is adopted. The middle of the frame consists of a loose panel; a piece of paper about half an inch larger each way is laid on this panel, which is then pushed into its frame, turning up the edges of the paper, which is thus stretched tight and held firm. Two pins in one frame fit into two holes in the other, and it is clear that the paper on one half of the frame must always fall accurately in the same place in regard to the negative in the other half of the frame.

To use this, then, for double printing, let us briefly describe the operations with a portrait upon which a natural landscape background is required. The portrait has been printed, and the landscape negative is placed in the frame. A mask having been cut out of a waste print, it is placed in position on the print, which is fixed in the frame, and held in its place to prevent slipping, by a slight touch of india-rubber solution. Being carefully adjusted, a little india-rubber solution is applied to the back of the mask, and the two parts of the frame are put together. By the pressure thus given the mask is attached to the landscape negative, to which it sticks, and leaves the print. The printing will then proceed with the most mechanical precision. The junction must in every case be perfect, without any further examination or adjustment.

In the case we have been assuming, two negatives the same size have been in use; but in large combination prints, negatives of various sizes are frequently employed. To work satisfactorily with these it would be necessary to attach each negative in its proper place to a larger plate of glass of the full size of the printing-frame. This can easily be effected with liquid glue. A similar plan might be adopted in using these frames for printing on opal glass.

We have seen the frame in operation, and also seen prints, both carbon and in silver, produced by it. The registration is, as it must be, absolutely perfect, and the mode of using is as easy as it well can be. Mr. Solomon is, we understand, agent for the frames.

A NEW METHOD OF COMBINATION PRINTING.

BY B. J. EDWARDS.

The most beautiful and artistic results yet produced by the aid of photography have been made by printing various parts of the picture from separate negatives, by which means a great power is placed in the hands of the artist, and effects are produced which it would be impossible to obtain in a picture printed from a single negative. But, however perfect the results, there are difficulties inseparably connected with the ordinary methods of combination printing which have hitherto prevented its general adoption, the chief obstacle being the difficulty of accurately adjusting the print and masks on the several negatives so that the joins shall not be detected in the finished picture. This is partly owing to the fact that the sensitive paper alters in size under various conditions of the atmosphere, thus rendering it a matter almost of impossibility to secure great accuracy with any degree of certainty.

In order to obviate these difficulties, and render the method available for ordinary commercial work, I have invented and patented a simple apparatus by means of which combination prints can be produced with ease and certainty, and, as nearly as possible, with the same rapidity as ordinary prints from single negatives.

The apparatus consists of a series of frames in which the negatives are held firmly fixed, and a corresponding series of frames which hold the sensitive paper or tissue firmly stretched in the required position These frames or boards are made to fit or register exactly to the frames carrying the negatives thus securing absolute accuracy in the adjustment of the various parts of the picture.

It is difficult to describe the method of working without drawings or models of the apparatus, which is extremely simple and easy to use. Only a little care and skill are required in cutting the masks for the parts of the negatives. The masks are adjusted by a simple process of transfer: a print is taken from the negative, and the mask is *attached* to the print, while it remains in the frame, by means of a little india-rubber solution; a little of the same solution is then spread on the surface of the masks; the frame carrying the print and mask is then placed in contact with the frame containing the other negative to be masked, and the mask remains attached to the negative in exactly the required position. Any degree of accuracy may be obtained, and, the mask or masks once adjusted, any number of prints may be made by simply refilling the frames with sensitive paper. No time is lost in printing the various parts of the picture, as each negative is exposed simultaneously, the frames being made interchangeable with each other.

The masks may be removed from the negatives by moistening them with a little benzole.

Landscape or interior backgrounds may be printed to portraits; and, provided the latter be taken with a light background, only one mask will be required. This method is also available for printing skies to landscape negatives, and many other purposes.

For combination printing in carbon, it is only necessary to substitute the sensitive carbon tissue for one of silver paper after the mask is adjusted in the manner described.

A NEW ARTIFCIAL LIGHT.

The *Berggeist* describes a new artificial light which has recently been successfully experimented with. It is the Philipp carbo-oxygen lamp, and its trial during the month of March, at Cologne, was such as to win approval on every hand. The system of lighting is distinguished from those already in existence by its simplicity, its brilliancy, and, moreover, by its less noxious character. The light is generated by the simultaneous combustion of a liquid chemical compound and a current of oxygen, arrangements for the purpose being constructed in a suitable lamp. The gas is derived from the atmosphere either by chemical or mechanical means; the chemical methods being to act upon the oxygen of the air with chloride of copper (Mallett's method) or with manganate of potash (Tessie du Mothay's method), while the mechanical mode is that of utilizing the different degrees of solubility of nitrogen and oxygen in water or other liquids. By compressing atmospheric air into receivers filled with water, a portion of the nitrogen is taken up by the water, while the oxygen remains insoluble in the water; the air, thus containing a goodly proportion of oxygen, is forced into a second reservoir of water, where a further amount of nitrogen is absorbed, and after the operation has been repeated seven or eight times an atmosphere is obtained containing 97 per cent. of oxygen. The nitrogen which has been separated is made use of in a well constructed apparatus, as an auxiliary to the motive force.

Experiments have established the fact that a flame fed with air containing 53 per cent. of oxygen yields a light equal in brilliancy to that obtained with pure oxygen, and with diluted oxygen of this kind the Philipp flame has a brilliancy of 90 to 100 candles, or ten times that of an ordinary gas jet. The light is of a bluish white, resembling very much that of electricity and magnesium.

The liquid employed consists of liquid hydro-carbons, very rich in carbon; it costs but little, burns economically, and can be employed only in this particular direction.

The combustion is maintained in a lamp—Philipp's carbo-oxygen lamp—fitted with a wick, into the flame of which the oxygen penetrates in a horizontal direction. The flame is thus made to assume the form of a star, and any heating of the wick-holder thereby prevented; if of the size and power above mentioned, the quantity of gas consumed is five and a-half cubic feet per hour. As to the lamp, no special attention is necessary beyond that of filling it with liquid, as the wick is of a very durable nature, and needs no trimming. The hydro-carbon employed is patented both in Europe and in America.

This method of lighting is, we believe, likely to be adopted very widely. Independently of its simplicity and reasonable cost, which are, indeed, extreme, it possesses the very eminent and valuable qualifications of perfect security; no explosion is in any way possible, such as not unfrequently occurs with ordinary coal gas and with hydrogen.

The costly trials undertaken by Tessie du Mothay, inaugurated at the exhibition of 1866, made a profound sensation at the time, and were regarded with considerable favour, although the apparatus employed was of a very costly description, and it was necessary to employ for the purpose two gases exceedingly dangerous to manipulate, which were brought through a double series of tubes, the one for ordinary gas, and the other for oxygen; the apparatus itself, moreover, necessitated a careful and continued superintendence. All these inconveniences disappear with the new carbo-oxygen system, which, besides its application to industrial purposes—the navy, railways, military operations, &c.—will be wonderfully well suited to photographic purposes, as has, indeed, been proved by the attainment of some very remarkable results.

The *Berggeist* concludes by saying that a method of lighting endowed with such important qualifications as the lamp invented by M. Philipp cannot remain long before being extensively known throughout the world.

ON DURABLE SENSITIVE ALBUMINIZED PAPER.

BY FRITZ HAUCK, OF BRUNSWICK.*

In a recent number of the *Archiv*, M. T. Baden, of Altona, described an easy method of preparing durable albuminized paper (see Photographic News, December 24, 1869), a process which at the time, received very favourable mention from Dr. Vogel. The mode of proceeding recommended was to wash the albuminized paper after sensitizing, and subsequently to subject it to the fumes of ammonia; this was the gist of the process, and how M. Baden could put himself forward as the author of it appears to me quite inexplicable. Some time previously, in No. 43 of the *Photographische Zeitung*, I published the details of the method, giving further instructions in reference to it in Nos. 44 and 48 of the same journal; as, however, many photographers may not have seen the notes in question, I take this opportunity of repeating them.

In the preparation of my durable sensitive paper the employment of a very weak silver bath only is necessary, one as low as four per cent. strength being, indeed, capable of use without any prejudicial effect upon the brilliancy of the pictures being apparent. If, indeed, the paper is prepared in the ordinary manner, the strength of the silver bath plays a very important rôle, for one part of the dried nitrate of silver becomes attacked by the chlorine liberated by the light, and a fresh film of chloride of silver upon the surface of the albumen is thus formed. This is partly the reason why strong baths afford vigorous pictures. In the process under consideration, all the free nitrate is washed off, and, therefore, the strength of the bath is of much less importance, and, as regards the coagulation of the albumen film, this latter reaction is easily brought about by adding to the sensitizing bath some alcohol, or a copper, or earth salt, as has often been proposed.

In my establishment I prepare my bath in the following manner:—

Distilled water ...	12 ounces	or 480 grammes
Nitrate of silver ...	½ ounce	,, 20 ,,
Nitrate of copper ...	½ drachm	,, 2·5 ,,

With this bath I obtain very good results, taking care, of course, every time it has been used, to bring it up again to its original strength. For manipulating the paper I employ two dishes filled with spring water. When a sheet has been sensitized, I transfer it to dish No. 1, and proceed in this way until the process of sensitizing is finished; the sheets are then taken out one by one, and placed in dish No. 2, the water from the first dish, which contains a considerable quantity of silver, being poured into the chloride of silver residue jar, and the vessel refilled with fresh water. The sheets are now retransferred to dish No. 1, and the operation repeated three times consecutively, when the paper will have been sufficiently washed.

The more perfectly the operations are conducted, the more durable will be the finished paper; and, as far as my experience goes, the period during which the same may be kept good is very great indeed. For three months it will preserve its brilliant whiteness; but if kept in perfectly dry localities, absolutely free from light, it remains in good condition for a much longer time. Chloride of calcium boxes are the best receptacles for the paper, as they fulfil the conditions required to a very perfect degree, for the drawback usually complained of in reference to such a method of preservation—excessive dryness—is of no consequence, inasmuch as the necessary amount of moisture required for obtaining prints of good tone is afterwards imparted to the paper in the operation of fuming. This fuming of the paper is brought about by the use of liquid ammonia, for a solid compound does not yield a sufficient quantity of moisture.

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* *Photographische Mittheilungen.*

Inasmuch as the paper becomes endowed with the necessary amount of sensitiveness only on the action of the ammonia fumes, it is easy to understand that the operation of toning may be postponed for a period of several days without any deterioration of the whites being feared, for the ammonia evaporates very quickly, as soon as the prints leave the pressure frames, and the paper again loses its sensitiveness in the degree that the ammonia escapes.

ON RENOVATING OLD DIPPING BATHS.

BY DR. D. VAN MONCKHOVEN.*

It is, unfortunately, a fact of frequent occurrence that a silver bath, even when newly made, is bad and unserviceable, a solution which has been used but a few days, or sometimes hours, occasionally giving dull and fogged pictures. To put a bath of this kind on one side, and to have recourse to a new one, is a remedy, certainly, but it often happens that in this way a considerable quantity of solution is accumulated, which might have been set right again with but very little trouble.

If the bath is very old, it is supersaturated with iodide of silver, which covers the negative entirely with thousands of minute holes. To correct a bath of this description, the usual plan is to add to it an equal volume of water, to precipitate the iodide of silver. The bath is thus rendered thick and milky, and, after being filtered, is supplemented with an amount of silver equal to eight per cent. of the quantity of water added. This mode of proceeding can hardly be deemed economical, because it is, in fact, neither more nor less than producing an entirely new bath, and, moreover, it should be remembered, that if the original solution was bad, any addition to it will not make it better.

When the bath yields dull negatives without vigour, or fogged pictures, it is usual to render the solution alkaline by the addition of carbonate of soda, until a permanent precipitate is formed, and then to expose it for several days in the sun, to filter it, and finally to add a few drops of nitric acid to bring about a slightly acid reaction. Thus doctored, the bath usually becomes good; but in winter, when there is no sun, the bath sometimes freezes externally, and several days are necessary before it is again in good order.

The method I am about to indicate is not only very rapid and very effective in removing the iodide of silver, but likewise puts the bath into such order that it is capable of producing negatives as clear and brilliant and free from fog as a new bath in good condition.

Two solutions are prepared as follows:—

Solution A.—Citric acid	... ...	10 grammes
Distilled water	...	100 ,,
Solution B.—Caustic soda...	...	10 ,,
Distilled water	...	100 ,,

For each litre of silver solution to be corrected, two cubic centimetres of solution A are added, and the bath well agitated to disperse the citric acid through the liquid. Five cubic centimetres of solution B are next put in, the liquid being again shaken, and there becomes formed a brown precipitate of oxide of silver, which partially, or even entirely, disappears if the bath happened to be in an acid condition prior to the addition of the citric acid. A further quantity of five cubic centimetres of solution B is added, and if, after energetic agitation, no more of the brown precipitate disappears, no further quantity of the solution should be added.

The bath is now poured into a glass bulb without being filtered, and heated under a spirit lamp until it boils. The solution will by this means become perfectly black by the precipitation of the organic matter, which, as we know, was the cause of the plates becoming fogged. The boiling should not, however, last for more than a minute, after which the solution is allowed to cool.

Heating the liquid in a porcelain vessel, even when covered with a lid or plate of earthenware, is not a satisfactory mode of proceeding, as the liquid, under these conditions, evaporates, but does not boil; exactly the contrary, indeed, to what is desired, viz., to bring the bath to 100° Cent. with as little loss by evaporation as possible.

The bath, when subsequently filtered, contains neither iodide of silver, organic matter, alcohol, nor ether, and is, indeed, in every way equal to a new bath. After filtration, it is merely necessary to add a drop or two of dilute nitric acid until a piece of blue litmus paper floating upon the solution gradually assumes a reddish tint.

THE "LICHTDRUCK" PROCESS.

BY C. F. JESSEN.*

If it be borne in mind that up to the reign of George the Second painting and its sister art, engraving, met with but little encouragement in Great Britain, and that in the first quarter of the eighteenth century little was done to educate the public taste, or to popularize these arts, their rapid progress up to this time is really astonishing. Since the days of Hogarth the advance made has been nothing short of marvellous.

The reproductive art, indeed, in a brief century and a-half has reached so high a point of perfection that little more seems wanting as an adjunct to its last great step, photography, except a ready and economical means of multiplication, coupled with the great essential, *permanency*.

The two points on which scientific efforts have hitherto come short are, in truth, those of economy and lasting qualities.

The power of reproducing the works of great masters, and the beautiful ideals of the finest minds, at such cost as would introduce them freely into the cottage, and, at the same time, of such excellence as would make them fit ornaments for the palace, would be no small boon, whether viewed morally or commercially. An indisputable authority, Mr. S. T. Davenport, in a paper upon "Prints and their Production," read before the Society of Arts on the 8th December last, says, "Photography, the process by which landscape scenery and natural objects have of late years been so beautifully rendered, has been hitherto wanting in the one important element of permanence." In speaking of photography, as I am about to do, I must not be supposed to overlook the fact that it has been, and, in the main, still is, a copying process; but I believe that at the present time a class of artists is being created by its means, and new paths for the development of its powers are being opened up. In December 1852 the Society of Arts brought together and exhibited the first collection of photographic prints, the results of French, German, and English skill, and though but little progress had as yet been made in the art, it was even at that time proposed to transfer the image to the surface of wood blocks; "but," said Mr. Roger Fenton, in his address at the opening of the Exhibition, "before sun-pictures can be extensively used in the production of letter-press, some method of copying them must be discovered which will produce as good or better results than the present ones, which shall be so simple in its manipulations that a workman of ordinary intelligence may be trusted to perform it, and which shall not depend upon the state of the weather for its success." The "Lichtdruck" process has, since the above was enunciated (it is confidently believed), fulfilled all these essential conditions. It would be tedious to enumerate the successive stages which have been reached in the road to finality. They are well known to the photographic profession, as is equally well the fact that no one has until now attained the proposed conditions.

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* *Bulletin Belge.*

* Read before the Photographic Society of London, June 14th. Mr. Jessen is agent for Messrs. Ohm and Grossman's process.

Mr. Davenport, tracing the course of research, says, "To obviate this *fugitive* character, to give *permanence* to the photographic print, was the object of many enquiries. Carbon was known to be indestructible; but how to incorporate carbon with any known substance used by photographers, and obtain by its means the brilliancy of light and shadow seen in the silver print, was not known. The first step taken in the solution of this problem was by Mr. Fox Talbot, the next by Herr Paul Pretsch."

The vast importance of each step in the right direction cannot be more forcibly illustrated than by stating the facts that the British Government so fully recognized the value of one discovery (that of the collodion process), made by Mr. Archer, as to grant a pension to his children, and that a sum of money for their benefit and that of his widow was also subscribed by photographers. In truth, such recognition was no more than due, inasmuch as directly, through the means of Mr. Archer's invention, a saving of £30,000 was effected for the nation in the Crimean war, while the expenditure of silver by photographers had amounted to £220,000, or 500 cwt. of silver per annum. Mr. Davenport further says, as if foreshadowing the future of photographic printing, "I have endeavoured to show that the artist-photographers not only have the will, but the power, of creating for the public works which possess the richness of colour and pictorial and artistic effects which have hitherto resulted alone from a laborious study, and translation of nature to canvas by the artist-painter, though I feel that the productions of the artist and engraver have, up to the present time, not been excelled or superseded by any of the New Art products hitherto produced; still I cannot fail to observe that it is probable that at no remote time engraving, like miniature painting, will have been swept out by the advances which the art of photography is now making." Let us hope that the result will be favourable to the advancement of public taste. I trust the reproductive art will increase the means of affording one of the best and purest sources of gratification, not only to the rich, but to the people at large. It must be a source of congratulation to the photographic world—artists and amateurs—that a method has at length been invented for obtaining photographic impressions which, while ensuring every particular of excellence hitherto attained, is of absolutely unchangeable stability, of certain result, simple in process, and so economical as to render it of real commercial value. This method has been very appropriately denominated "Lichtdruck," which term, though applied absolutely to one process alone of the several which have almost simultaneously sprung into existence, is equally expressive of all.

During a recent journey on the Continent the writer enjoyed favourable opportunities for acquainting himself with the different processes of carbon printing and photography. He thoroughly examined Herr Albert's, Obernetter's, Herring's, Manechus, and Max Gemoser's processes. These several processes are not dissimilar in principle, but the details, as well in the application as in manipulation, are considerably at variance.

After careful investigation and experiment, with a view of giving to the photographic profession a neat and effective method of working this new art—"Lichtdruck"—the author has put together a system which, he feels proud to say, has given unqualified satisfaction to competent judges and critics. The commercial value of the "Lichtdruck" process is obvious, whether to the higher or lower branches of the profession, as well as to lithographers, inasmuch as the cost of apparatus is really so insignificant as to bring it within the reach of every one to add it to his establishment, and so attain the important object of multiplying portraits, pictures, &c., under any ordinary conditions of light and temperature. There can be no doubt that "Lichtdruck" will inaugurate a new era in photography. By means of it any number of impressions can be printed off from a previously prepared plate or printing-surface in quick succession, and on any kind of paper, with an effect equal to the best copper, steel, or lithographic prints, in point of colour, definition, light and shade, delicacy of outline and half-tone, boldness of figure, and, be it specially added, in indestructibility.

The specimens, when exhibited, have invariably elicited high eulogiums. The subjects, embracing landscapes from nature, copies of engravings, groups, portraits, architecture, &c., fully demonstrate the success and importance of the process by their high finish, clearness, and other artistic merits, in a degree hitherto unattainable. The process claims for itself a superiority over every previous attempt in the way of photo-mechanical or carbon printing, and the *fading* incidental to photographs taken by the old method is entirely obviated, the "Lichtdruck" prints being imperishable. The mode of conducting the process is quite simple. The plate for printing should be of thick glass, which is coated with a mixture of gelatine, albumen, and a solution of the bichromate of potash in distilled water, and then dried in an oven; when thoroughly dry, it is exposed to the daylight, then washed and dried a second time. A mixture is now poured over the glass consisting of—

Gelatine dissolved in distilled water.
Albumen.
Bichromates of potash and ammonia dissolved.
Gum-myrrh and gum-benzoin dissolved in alcohol.
Nitrate of silver dissolved in water.
Iodide of cadmium and bromide of potassium dissolved in distilled water.

The glass is again dried in the oven, and is ready for use. A photographic negative is placed on the prepared surface of the glass plate, and exposed to the action of daylight. The negative being copied on to the glass, the plate is washed well, dried, and is ready to work with. The printing medium is carbon used as an ink, and the tone of colour can be varied at pleasure by the addition of lakes or other suitable pigments. In delicate operations such as those involved in the working of this process, the niceties of manipulation constitute the chief elements of success, and these points cannot, of course, be made so clearly intelligible by description as by practical demonstration with materials and printing-press at hand.

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DOUBLE SALTS OF IODINE AND BROMINE

BY DR. VAN MONCKHOVEN.

Two more double salts recently prepared by me beyond those previously described may be now mentioned.

Double Iodide of Ethylamine and Cadmium.—This salt resembles the corresponding compound of ammonium. It is soluble in ether and alcohol, crystallizes with difficulty, but its properties are like in nature to those of the salt of ammonium.

Bromide of Cadmium-ethylamine.—This bromide crystallizes with difficulty, but is exceedingly soluble in ether and alcohol. It possesses a characteristic property which will render it very precious in the manufacture of photographic collodion, viz., the property of thickening collodion, and rendering it capable of employment within three-quarters of an hour after preparation.

Everybody, I believe, is aware that I have launched into commerce a new collodion sensitized with ethylamine salts, The simple collodion is contained in a bottle, and the iodizing solution in a separate tube, traversing the cork and occupying the axis of the bottle. This iodizing preparation is composed of the double iodide of potassium and of cadmium and ethylamine. I do not suppress the ethylamine salt, except in such cases where the gun-cotton employed yields too thin a collodion, in which case I augment the proportion of bromide of cadmium, to render the solution of thicker consistence.

Vienna, 9th June, 1870.

THE HYPO AND GOLD TONING BATH.

Mr. H. T. **Anthony**, in his *Bulletin*, gives some further details of his experiments with a gold and hypo bath, which resulted in very brilliant prints. He says:—

"Not to occupy too much space with explanatory details, we will state that, having made a fresh hyposulphite solution, of the ordinary strength used for fixing, a piece of blue litmus paper was placed in it, and then a weak solution of acetic acid was added very carefully and with constant stirring until the litmus paper indicated that the bath was acid. This was also indicated by the solution becoming very slightly milky or turbid in appearance, owing to the decomposition of the hyposulphite. The bath being now evidently unfit for fixing prints in, the action of the acid was arrested, and the bath restored to an alkaline state, by stirring into it some pure carbonate of baryta.

Upon placing in this solution a print fresh from any toning bath, the same effect resulted as described by Mr. Ayres in his article. A very slightly toned print becomes deep and rich, with whites of extreme purity, and no bleaching of the half-tones. Some two years after we had made the above experiment, we received from one of our customers some prints toned with a process to all intents identical with our own. The prints we made at the time of my experiment had been preserved, but had not been examined until the matter was thus again brought to our notice. Upon examining them, we found that they remained perfectly unchanged.

At a subsequent meeting of the New York Photographic Society these prints were exhibited, and deposited with the curators for the purpose of preservation and future reference. A committee was also appointed to investigate the matter and report upon it. No report, that we are aware of, has ever been made. As we consider it of sufficient importance to merit scientific investigation, we have referred to it here for the purpose of suggesting that persons who have time to make the experiments should repeat them and report their results. One very great excellence of the hypo solution thus treated consisted in the fact that it had apparently no bleaching effect upon the print. The fact that a very slightly toned print became deep and rich in it rendered deep printing unnecessary. If it shall hereafter be found that prints fixed in the above-described solution are permanent, and do not come under the description of sulphur-toned prints, the use of it will be of great advantage to photographers, by first reducing the time of printing; second, finishing the print at a shade but little deeper than it is desired to have; third, quicker toning; and fourth, an economy in gold.

It is only necessary to state further, that other vegetable acids were used with the same result, and that the substitution of carbonate of soda for the carbonate of baryta made no difference.

THE "ECHO" ON PHOTOGRAPHY.

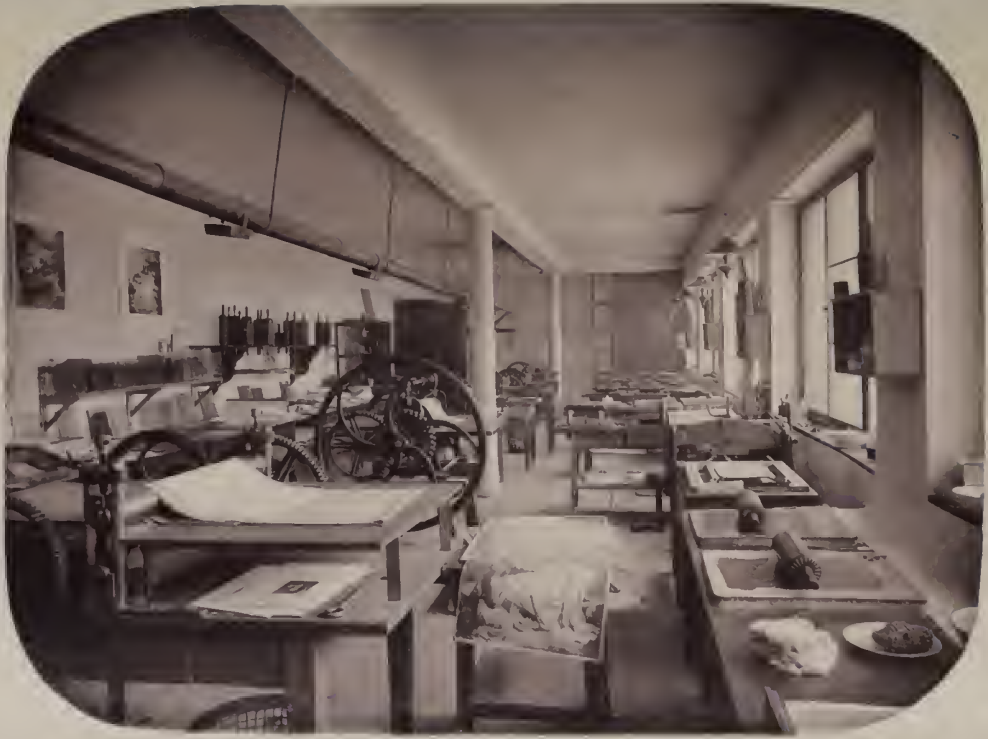
When, in the year 1850, Gustave Le Gray, of Paris, then an ardent worker in photography, published the rudiments of a process for the application of collodion to glass, as a means for "obtaining proofs in the camera in five seconds in shade," he was evidently unaware that by his discovery he laid the foundation-stone of everything which has since been done in photographic science. Up to this time photographic negatives were only obtained on paper rendered as transparent as possible by the use, principally, of wax; while portraiture was almost entirely restricted to the Daguerreotype, no paper negative being of sufficient transparency and delicacy to do justice to the subtle gradations of light and shade required in that branch of the art. Le Gray's suggestions appear to have attracted the notice of our countryman, Mr. F. S. Archer, and he, with the valuable assistance and co-operation of Dr. Diamond, worked out Le Gray's crude formulæ into a definite proposal for the adoption of collodion on glass as the basis of a new photographic process.

But Archer's own statements were, as to the formulæ to be employed, little less crude than those of Le Gray; he certainly, however, published the fact that collodion on glass was *the* thing to use, and from that time to this the progress of photographic science may be likened to a cairn, on to which a numerous band of intelligent experimentalists have each thrown their stone. At the time that Le Gray made his suggestion, the Daguerreotype process had been brought to extreme perfection. One of the most interesting features of the exhibition that was held some short time since, under the auspices of the Photographic Society, consisted of a fine series of Daguerreotypes of the Great Exhibition of 1851, exhibited by the distinguished photographic artist, Mr. Mayall. It was interesting to compare these *chef-d'œuvres* of a previous era with the choicest photographic work of the present day, and to notice how vastly the art tendency of photography had broadened during the past few years. It is not so very long since a photograph was merely a wonderful thing, in which the microscopic details of dress in portraiture, and of stones, leaves, &c., in landscape, attracted every one's attention; but by the earnest work of the best men we have been led to forget the mere mechanical part, and to admire and appreciate whatever of artistic feeling is shown in their work.

Mr. T. R. Williams was one of the first to show thoroughly artistic portraits, and up to the present time his works have not been surpassed. Mr. Locke, too, was among the earliest to infuse a feeling for art into his portraits, and he has since elevated coloured photography far above the work of any one else in the same line. The first great step in advance in landscape was made by Mr. Bedford, whose name is familiar to everyone in connection with this branch of the art. But it was reserved to Mr. H. P. Robinson to show the most decided faith in the capabilities of photography, and a large composition picture by him, entitled "Bringing Home the May," attracted a considerable attention some years since. He has followed this picture by many others since, but that work still, we think, remains his best.

In the year 1862 some studies of sea and sky were exhibited by Colonel Stuart Wortley, and the effect of these was to draw attention to the unsatisfactory and inartistic appearance of the white sky in landscapes, and to see a landscape now without, at all events, a suggestion of cloud and atmosphere is the exception, and not the rule. Nor must we omit to mention Mrs. Cameron as an ambitious and earnest worker in art photography, and Mr. D. W. Wynfield, the now rising painter, from whom Mrs. Cameron drew her first inspirations; while Mr. Hubbard, the author of "Stolen Moments," will, if we mistake not, give great assistance to photography in its endeavours to assert its right to be considered a fine art.

In the printing of photographs great alterations seem to be promised at no very distant date, and the ordinary silver print will, for commercial purposes, be not improbably superseded by one of the new processes for mechanical printing. The carbon process, brought to such excellence by Mr. Swan, is invaluable for the production of facsimile copies of old drawings and engravings, but fails to give the delicacy and transparency of shadow with which alone a good portrait or landscape negative can be done justice to. Delicacy is one of the specialities of the process which will, we think, take the lead among those by which the photograph is printed in something of the same way in which ordinary lithograph is produced. We allude to the process lately invented by M. Albert, of Munich, and of which the following short summary may be of interest to our readers. Given the ordinary photographic negative, prints are obtained from it as follows:—A thick plate of glass is coated with a solution of gelatine and albumen in which a certain quantity of bichromate of potash has been dissolved; the plate is then dried and exposed to the light, the action on which causes the whole



ALBERT-TYPE: A New Photo-Mechanical Printing Process.

This example of Herr Albert's New Process, showing the Interior of his Printing Establishment, is presented to the Readers of the PHOTOGRAPHIC NEWS, *June 24th*, 1870.

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surface to become hard and insoluble. It is then coated a second time with a solution of gelatine and bichromate of potash, and when dry is exposed in the ordinary way under the negative. An extraordinary property is now developed in the bichromated gelatine. Wherever the shadows—*i.e.*, the more or less transparent parts of the negative—permit the access of light to the film beneath, such portions of the film become hard, and unable to absorb water; while under the lights of the negative (they being more or less opaque, and preventing the transmission of light to the film beneath) the portions protected retain the power of absorbing water. If, then, after the removal of the negative, a sponge charged with water is passed over the gelatine film, the portions unaltered by light retain the power of absorbing moisture; while the hardened parts, rejecting the water, take the coating of printing ink which is afterwards applied.

The delicate gelatine mould has then a sheet of paper laid on it, pressure is applied by the descent of a vertically moving press, and the inked surface of the gelatine delivers its transcript on to the paper with every gradation of tone existing in the original negative faithfully reproduced. From one of these plates, it is stated by the inventor, thousands of impressions can be struck off, and its value for book illustration can hardly be overrated. We have thus briefly laid before our readers a general outline of the progress of photographic art during the past few years, an art as yet in its early youth, and destined to produce greater marvels than it has yet accomplished ere its youth shall have passed into manhood.

ENAMEL PHOTOGRAPHS—BURNT-IN PHOTOGRAPHS.

BY PROF. J. TOWLER, M.D.*

The reader, at the outset, must correct a mistake into which he most probably has already fallen, of comprehending, under the head of enamelled photographs, photographs on paper glazed with a layer of collodion, gelatine, &c. Let these be called by their proper name: glazed photographs. Enamelled photographs are pictures taken by the lens on a porcelain base, developed by an enamel powder, which is afterwards fused, in a muffle in the cupel or assay furnace, into the porcelain as a background, and thus becomes a part of the material, and equally as imperishable. The art of thus burning-in photographs has attained already a considerable degree of perfection in the hands of a few; and, from the facility and certainty of the process, it is somewhat surprising that so few have embraced the process as a business. Of all photographs the enamel photograph is the most imperishable, and, at the same time, about the most beautiful; and certainly this is so when the art of the limner co-operates with the manipulations of the photographer.

The white surface of a watch face, on which the hours, &c., are delineated, is an enamelled surface; and if a photograph be taken on such a surface, and afterwards, by fusion in the fire, it can be blended with the substance and become a part of it, then such a photograph is called an enamelled photograph. Solomon and Garnier, Joubert and Poitevin, have given us processes by means of which photographs can be taken that admit of being burnt-in or fused into a porcelain or enamel base. Solomon and Garnier, I believe, were the first to call attention to a peculiar property of the chromic salts in mixture with saccharine or gummy solutions, whereby these lost their stickiness when exposed to light. Working upon this principle as a base, the authors just mentioned, as well as Joubert, Alker, and Geymet, Lucy Fossariere, and some others, have so far perfected processes in carbon printing as to apply them in enamel printing or vitrification with great success. The principle is this: a composition is made, of course in the dark room (yellow room), of water, bichromate of potassa, sugar, honey, and gum. This represents the collodion; it is filtered two or three times, and then poured, exactly in the same manner as collodion, over a glass plate. The film is then dried. Even when dry, the surface attracts or adheres to fine powder, as of charcoal, enamel, &c., with much avidity, by reason of a certain amount of moisture or glutinosity in the film; but if it be exposed to sunlight for a few seconds, the film loses this glutinous character, parts with its moisture, and, consequently, no longer adheres to the powders above mentioned. If a negative, therefore, be placed over such a film, all the dark parts—such as the sky in a landscape, and the face in a portrait—will prevent the light from acting upon the film beneath; these parts, therefore, retain their original character of adhering to charcoal powder, and will exhibit dark parts in the film corresponding to the dark parts on the negative. Thus negatives produce, on such prepared films, also negatives; and positives produce positives.

Poitevin's process is based upon the principle that tartrate of the protoxide of iron is hygroscopic, and that this substance can be produced by the action of light on the sesquisalts of iron in connection with tartaric acid. The representative of collodion in this process is a mixture of sesquichloride of iron, tartaric acid, and water, which is poured upon the glass plate and dried. In this state it is not hygroscopic, consequently just the reverse of Joubert's plates, but becomes so where the light acts. It is thus evident that negatives produce positives on such films, and positives produce negatives. Both these processes have been applied with success in the production of enamel photographs. Naturally, these enamel photographs are monochromes—that is, they are printed in a single colour, like all our uncoloured ordinary photographs. The artist, of course, can work in upon the monochrome photograph whatsoever metallic colours he chooses, which can be brought out in the muffle in true life-like colours, and thus produce those magnificent specimens of ceramic art which we see executed at the potteries of Dresden, &c.

Now that I have described the principles upon which we have to work in order to produce a burnt-in photograph on enamel and with enamel, I will proceed to the details of a working process.

The Preparation of the Positive.

A great deal of the success in enamel photography depends upon the original negative or positive used to make the impression. We shall follow Joubert's process; and, consequently, a positive is required. The positive must absolutely be on plate or perfectly flat glass; and the impression to be received on the chromic collodion must be also on plate glass; and if the positive is to be made from a negative by contact, the negative glass, too, must be perfectly flat. Use, therefore, nothing but plate glass in this process, as far as glass is needed. We will now proceed to the next part of the operation.

Chromic Collodion.

Distilled water	2 ounces
Bichromate of ammonia ...	100 grains
Gum arabic (picked)	48 ,,
Loaf sugar	20 ,,
Honey	9 ,,

This mixture must be made in the dark room, and kept in the dark when not required for use. It is better to prepare it fresh for each operation.* Filter the solution two

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* *Philadelphia Photographer.*

* This fluid is very apt to undergo fermentation; hence, as observed, it is better to prepare it fresh; but Lucy Fossariere prepares his fluids and keeps them in stock ready for mixture as follows.—

1.—Stock Solution of Borax.

Pulverize a pound of borax, and place it in a quart stoppered vessel; fill up the vessel with distilled water, and shake the mixture frequently for several days. The upper portion is to be used when required; and the vessel is then again filled up with water. In this way a saturated solution is always in readiness.

2.—Stock Solution.

Dissolve in a two-quart bottle as follows:—

Loaf sugar	6 ounces
Gum arabic	2 ,,
Filtered water	1 quart

The mixture has to be shaken frequently for several days, until the gum is dissolved, and then a pint of stock solution No. 1 is added. Shake the mixture well up, and place away for use.

or three times through paper or a tuft of cotton. Furthermore, receive the filtrate into a tall cylindrical vessel, and allow the solution to stand for about twenty-four hours before use. By means of a syphon the upper part of the fluid can be decanted off from the residual portion; but this must take place without shaking the vessel or agitating the contents. The upper part alone will be perfectly clean and free from all invaluable particles.

Before you coat the plate glass with this mixture, see that it is perfectly clean (no substratum of albumen, &c., is necessary). If the plate has just been cleaned and polished, breathe upon its whole surface, and, as soon as the film of breath has evaporated, pour upon it the chromic collodion, just as you would any ordinary collodion, and let the plate drain a few moments. Remove any excess from the lower corner and edges with a piece of blotting-paper, and then dry the film at a gentle heat, on a plate of iron placed over the flame of a spirit lamp. When dry, it is ready to be exposed, and must be exposed right away, or nearly so, since it undergoes changes if kept.

Exposure.

Place the glass positive first in the pressure frame, film side upwards, and the chromic plate just prepared with its film downwards, and in contact with the positive film. Since the two plates are perfectly flat, but very little pressure is required to keep them in opposition. Close the back of the frame, and expose to the sun's rays for about a minute, or until the sky part of the landscape or the face of the portrait is covered with moisture, eliminated by the action of the light on the parts beneath. This is quite visible to the sight; a phenomenon due to the observations of Alker and Geymet. Of course a much longer exposure is neces-in different light, even as much as three or four minutes. Much experience is required in hitting upon the right time; and if the time is not right it is not advisable to try to patch up a picture by forcing it; in fact, it is no use to try to get any picture at all with an over-exposed plate, for in this case the sensitive film has lost all its moisture in every part, so that the enamel adheres nowhere. But an under-exposed plate is still too moist all over, and attracts too much of the fine powder. This trouble can be slightly remedied, it is true, by warming the plate slightly, when a portion of the powder drops off, or may be brushed off.

Developing the Picture.

This operation is performed in the dark or yellow room, as is customary with the ordinary collodion picture. The rule is this, in very dry weather: to allow the plate to get cool before exposure, and to wait two or three minutes before you proceed to development; on the contrary, if the weather is damp, the plate is exposed right away whilst still warm, and developed immediately under the same conditions. Attending to these precautions, develop accordingly, The developer is in reality an impalpable glass or enamel powder perfectly dry. You use a large camel's-hair pencil, also perfectly dry. Dip the brush or pencil into the powder, and rub it round in the powder, and then transfer it to the exposed film. Pat the film with the pencil all over in a perpendicular direction, so as thus to transfer some of the powder to every part of the film; then rub the powder gently into the film by a circular motion, beginning at one corner and proceeding in small circles all over the film. It is well to have a light beneath the plate of glass, or a sheet of white paper, in order to watch the progress of the development. The powder (of any colour you may desire) you will now observe to adhere in different parts and not in others, and thus to form the picture. The image thus formed must be very clear; it is not necessary, however, that the shades should be thick and heavy; if the picture is only distinct—like a positive before it is intensified, or like a negative for solar work—it will come out all right when fused in the muffle.

Fixing the Picture.

The picture is first coated with a film of plain collodion, consisting of equal parts of ether and alcohol, and about eight grains of gun-cotton to the ounce of liquid. As soon as the collodion has set—that is, in about two or three minutes—the plate is immersed in a dish of clean water, rendered acid either with hydrochloric or sulphuric acid. This mixture soon removes all the free chromic solution in the film. Let the plate remain in the solution about ten minutes, and then take it out, and with a sharp penknife cut all round the edges of the film near to the edges of the glass, and immerse the plate in another dish of clean water, in order to remove the free acid left by the fixing solution.

Transferring the Picture.

This immersion in water will cause the film to separate from the glass and to rise to the surface of the water. If the film refuses to separate easily, immerse it again in the acid water, but do not attempt to force the film to separate. Wash the film well, so as to get rid of all the acid, and then transfer it to the following saccharine solution:—

Water	1 pint
Sugar	2¼ ounces.

The transference is made from one vessel to another by placing a piece of paper beneath the film and lifting it out. With care, there is no danger of injuring the film by this transference. Let the film remain in the sugar solution about five minutes. The sugar, like so much glue, is intended to cause the film to adhere to the enamel plate. The enamel plate requires no further preparation than simple cleaning. You slide the plate beneath the film, bring the upper edge of the latter in opposition with upper edge of the enamel (it inclines downwards), and then draw the plate gently from the fluid, letting the film fall gradually upon the plate. The enamel plate itself is supported on a plate of glass with an elevated ledge at the bottom, cemented on with shellac; this plate of glass, in the form of a dipper, is bent at an obtuse angle, to allow the enamel plate to slide underneath the film; it is held in the left hand, whilst the right is at liberty to guide the film, in order to bring the upper edge in opposition with the enamel as before said. When the film is once in its place, let it drain, and afterwards place the plate on a piece of blotting-paper resting on a thick plate of glass. Above all things, before the plate leaves the sugar-water, see that there are not folds in the film; and if such exist, remove them by gently pulling the edge of the film in the proper direction, but make no attempt to effect this by pressure. Very small inequalities can be removed by stretching the film as it lies on the blotting-paper. When the surface is quite smooth, place over it a piece of tissue-paper, and bring it into contact by patting it with a piece of cotton wool. See that the film adheres uniformly, and that there are no bubbles. Remove the tissue-paper, and put a dry piece in its place, using continually the tuft of cotton to produce uniform contact. Afterwards set the plate aside to dry in the air, but not by artificial heat.

(To be continued.)

3.—*Stock Solution.*

Mix together in a three-ounce vial as follows:—

Honey	1 ounce
Borax (clear solution from No. 1)	1 ,,

Shake well, and keep until exhausted.

4.—*Stock Solution.*

Mix together in a three-ounce bottle as follows:—

Bichromate of ammonia	2 ounces
Water...	2 ,,

Shake the water so as to obtain a saturated solution.

5.—*Sensitive Liquid for present Use.*

Boracic liquid (stock solution No. 2)...	60 minims
Bichromate liquid (stock solution No. 4)	40 ,,
Filtered water	106 ,,

N.B.—If the weather is very warm and dry, add three or four drops of the stock solution No. 3.

Correspondence.

THE VELOCIPEDE FOR PHOTOGRAPHIC TOURISTS.

Dear Sir,—Having had a year's experience with bicycles and other velocipedes, and as the season is now fast approaching—in fact, has already come—when so many photographers leave their hot studios for the fresh country air or sea breeze, I fancied a hint or two might not be unacceptable to those who may be intending to make the bicycle or three or four-wheeled velocipedes their means of conveyance from one locality to another.

It is true the mania for bicycles has long since died out, but there are many who have not yet used them much, if at all; and many may be thinking of using them during the present summer. If the wet process is to be used, a tricycle or four-wheeler is absolutely necessary; but I should advise any one intending to use the wet process in the field *not* to use a velocipede of any description, but to manage with some other means of transit to which they may have been accustomed, except in the case of small plates; for if but a small size be used, the amount of space required and the weight are of course necessarily diminished. If the dry process be used, the bicycle is by far the best machine; and I enclose a photograph of my bicycle ready for action. You will see that the case containing the camera and three double backs is strapped on to a light board, which is fastened to the spring over the hind wheel, in exactly the same manner as the saddle is fastened to the fore part of the spring. The tripod should be a folding one; this can easily be strapped at one end to the extreme end of the spring over the hind wheel, and at the other to the support that unites the two wheels. The lens I carry in a leather bag hung over my back. After trying many ways, I prefer this, as being the easiest and safest.

The next question is, how far can the bicycle be made use of as a means of locomotion with one's photographic traps? In answer, I may say, that if the weather be really hot, as is generally the case when we wish it to be cool, riding a bicycle, if it be only a mile or two, is torture in the extreme; so that any one may judge of the effect of riding some twenty miles or so in such weather. For this reason I can hardly recommend a bicycle—or, in fact, any other velocipede—for a long photographic tour in hot weather; but it is a very useful adjunct to a dry-plate photographer's paraphernalia, for if he put up at some town or village within anything under twelve miles of spots he wishes to photograph, he could easily run out to the desired locality before the heat of the sun became too great, and return in the cool of the evening, thus avoiding all the heat of day, and, at the same time, getting to and from the places to be photographed without the expense (and often nuisance) of a hired vehicle.

I think the above the only real way in which the bicycle may be said to be really useful to a photographer; and should any of your readers require more details, I shall be happy to furnish them with any information that I can give. I should also be happy to send a photograph of my bicycle, with its dry plate apparatus, to any who may not understand how the camera, &c., is fastened on.—Yours truly, W. J. A. Grant.

Harrow, June 20th, 1870.

PRETSCH AND PHOTO-GALVANOGRAPHY.

Dear Sir,—I have debated with myself whether or not to continue this controversy. Truth and justice, however, compel me to have another say.

And, first, let me observe, in answer to you, Mr. Editor, that I could not fight Pretsch "in gloves." I have no *malicious* animus against him. Nor would I wantonly "take the wind out of any man's sails." I am ready at this moment to shake hands with Pretsch, and publicly to acknowledge his superior excellence, and to apologize for my misconceptions of him, if the stern "logic of facts" were not dead against him. I consider I have done only my duty in the interests of scientific truth in showing that neither the man nor his work warranted the claims put forward. This was a case in which it was impossible to separate the man from his pretended work.

By the way, I have made a mistake. In a former communication, I stated that £250 was paid to Pretsch. I find, after looking over some papers, that the amount was £200.

And now a word in answer to the "Old Photographer." In your number of the 10th inst., that kind old gentleman impales as it seems to me, "poor Pretsch" on one of the horns of a serious dilemma. He says that Pretsch had a secret method of working. Now, either Pretsch had a secret, or he had not. If he had a secret, he was dishonest, because he took the money of the company on the clear understanding that he was to give us the full benefit of his knowledge and experience—that he was to hold back nothing. If he had not a secret, he was—what would the "Old Photographer" say, for pretending to have one? But did Pretsch ever claim to have a secret? Never, to my knowledge. The idea is moonshine.

I can, indeed, sympathize with all who are honestly struggling, against almost overwhelming odds, to bring their inventions into practical use. But, really, my good "Old Photographer," I am not very grateful to you for bracketing me in sympathy and fellow-feeling with a man who, as I can prove, never could work practically, and whose fame, such as it is, rests on results the fruit of the labours of others, which he has been dexterous enough to win credit for as his own. Like young Martin Chuzzlewit, I have had to stand and witness my handiwork appropriated, *a la* Pecksniff, by Pretsch, without one word of acknowledgment. Notably was this the case on the occasion of the meeting at the Society of Arts in 1856, and also at the meeting of the Photographic Society on 21st June, 1856. By-the-bye, at the latter meeting, Pretsch said nothing of the labours of Mr. Fox Talbot, but passed them by in a lump allusion to his former papers read at the Society of Arts; yet he was eager to make a reclamation against Poitevin and Messrs. Rousseau and Musson, of Paris, who, a few months after the publication of the Pretsch patent, had laid claim to and patented a similar process. I have never myself been able to understand how Poitevin, except as regards photo-lithography and carbon printing, had any *locus standi* in respect of his patent No. 2816, 13th December, 1855, which he offered for purchase to our company in 1856. It would really seem as if Poitevin had poached on Pretsch as the latter had done on Talbot. Surely there is not in the domain of our art anything analogous to what the microscope reveals in nature—the parasite of the parasite of a bee! Poitevin has, as I sincerely believe, done good service as an experimentalist; still, while the matter to which I have alluded remains unexplained, there is a blot on his scutcheon.

But to return to the "Old Photographer." He has made a direct appeal to me. After giving Pretsch a pat, he indulges in a sly dig at Dallas. He insinuates that the latter does not come into court with clean hands, as he, too, has described plates as "untouched by the *graver*" which "have been worked upon by roulette, scraper, or other instrument." He says this is "freely whispered," and "is a point upon which Mr. Dallas can give useful information." So I can. I have, therefore, much pleasure in referring the "Old Photographer" and all "free whisperers" to your own pages. I *have* issued plates with the above inscription, and for the best of all reasons: because it was true. I never wished to mislead, and I question if even the "Old Photographer" himself was misled. On the 1st of January, 1864, you, sir, issued the "Kenilworth," with the inscription aforesaid, as a presentation print to your subscribers. Besides your editorial observations to the effect that the plate was unsophisticated, there was a contribution by myself, in which I not only explained what had been done to the plate by the *engraver*, but I advocated the employment of tool work in order to give artistic value. I expressly mentioned that *a tool* had been used on my plate. I said "the only tool that has touched the work has been for the purpose of cleaning the lights. Nothing has been done to render the plate anything else than a reproduction of the original photograph by means of carbon ink and the copper plate press. In all respects save one, the extreme darks in this photograph very dense, I believe I may safely say that nothing appreciable has been lost. Under the arch, the original photograph is a black mass by reflected light, but showing by transmitted light the details seen in my reproduction. I have since overcome the difficulty of obtaining an absolutely dense black. I issue this specimen free from all touching up."

You, Mr. Editor, had the original photograph before you, and my reproduction, and had my statements been untrue, I do not think you would have accepted them on my mere *ipse dixit*.

Now it is not an equivocation, but a distinction with a vast difference, between "untouched by the *graver*," and "untouched by the *engraver*." The former means that no tool has been employed to put detail and colour into the plate. The graver is a tool which can be used only to dig. The roulette is also a digging tool designed to produce, by means of dots, either a mass of colour, delicate half tints, or tender outlines. Its judicious use requires a very skilful hand, while the graver is not an instrument that any fool can handle. Neither, on the contrary, it may be said, is the scraper. Admitted. But the work is much less. The scraper can put in no detail or colour. Its use on my plates is simply that of a *developer of the detail and colour already in the plate.* This work is as nothing compared with the cost of graver and roulette manipulation. True, it cannot be done by a clown. It wants delicacy of hand combined with intelligence. An unskilful engraver may destroy the chiaroscuro, and a very unskilful fellow may even scrape away fine detail, but no one would choose the scraper to put fine detail into a plate that had it not.

At the same time that I introduced my specimens I issued the circular I still send out. You had that circular put into your hands with the "Kenilworth," and I have no doubt the "Old Photographer" has read it. I have not been backward in circulating it. I said: "I shall not attempt to deceive the public by saying that my results are absolutely untouched by the engraver. The plates pass into the hands of a skilled engraver to be cleaned, and to have defects removed which arise from purely accidental causes not inherent in the process. If there were radical deficiencies to be supplied--such as filling in details—the expense would be great, to say nothing of diminished value as a facsimile. When desirable, special engraved effects can be introduced without injury to fidelity. My plates afford the artist engraver a valuable basis on which to work: for not only is a great part of his labour and skill anticipated and expedited, but he is frequently outdone by nature's own touches and effects."

In my paper prepared for the British Association in 1863, when I submitted my specimens (the paper was no doubt seen by the "Old Photographer," as you published it in Vol. VII., page 439 of the News), I said: "They [the specimens] have received no aid from the graver. Each plate has passed into the hands of a skilful engraver, but merely for the purpose of careful cleaning. Not a single detail or half-tone has been introduced by tool-work. Nor have the vigorous parts been doctored with acid or the roulette. The impressions show honestly the result of the process." And further on in the same paper I remarked, concerning the deficiencies in the photo galvanographic process: "This led to a pretty free employment of the graver and roulette just in the very parts which made hand-labour expensive. The process, indeed, was never capable of the high flight which was attempted, and, as I had predicted, it broke down. It was an effort to run—and very fast, too—before the bantling had learnt to walk. Where expense was no object the graver and roulette were a great assistance. But, besides lessening the value of the facsimile, it was a fraud on the public to represent the highly worked-up result as photo-galvanography. Since the abandonment of the process by the company, other firms have endeavoured, in connection with the patentee, to render it available; but, without expensive assistance from the graver, it cannot be used for fine art purposes; and, even when highly worked-up, the result cannot be said to be perfectly satisfactory."

Now with regard to your editorial observations on the result of the discussion at the Photographic Society. You say: "The matter finally resolves itself into a question of credibility of evidence." Possibly. But there is another aspect. What is physically practicable? There are some things which, to the initiated, carry their own refutation; and this is one of them. Any person who knows about plate-printing is often made disagreeably aware that even *tarnish* and the slightest scratch will print. How much more strongly, then, will the dirt tint produced upon a copper-plate, electrotyped from a mould made conducting with a foreign material—as silver, black-lead, or other means? In addition to this, in the photo-galvanographic process there is the comparatively rough and uneven *top* surface of a gelatine film, which requires several hours to dry, and which, besides its natural absence of polish, cannot easily be kept free from dust specks. All this, faithfully copied by the mould, is reproduced on the copper matrix. This alone necessitated the employment of a skilled engraver, to put the plate in condition with a view to the ultimate printing-plate, which, without the previous work on the matrix, would often have been a very sorry affair indeed. All this might, however, be considered legitimate cleaning, though it would far from warrant the assertion of the patentee and his abettors that the plate was "absolutely untouched" But this was not all. The conditions of the exposure were so nicely balanced, and there was no seeing what was going on, that the plates were either over or under-exposed. If over-exposed, the fine details and delicate half-tones were either partially or totally destroyed; if under-exposed, the detail in shadow did not come out. In either case the aid of a highly skilled engraver became absolutely necessary to produce a good and presentable result. "Absolutely untouched" photo-galvanographic plates were, therefore, in the nature of things, physically impossible. The question of personal credibility goes but little way in deciding the matter. Mr. Dallas, however, does not think himself "mistaken," as you suggest.

As regards employing the engraver, my reasoning on photo-engraving has been that, given the conditions of ordinary copper-plate printing, it is Utopian to expect to produce "absolutely untouched plates." What the public really wants is a *beautiful* or *useful* thing at a reasonable cost. How obtained is of no consequence, provided photographic truth is not palpably falsified. I consider it as lawful to retouch a photo-engraved plate artistically, as it is now acknowledged to be legitimate to do the same to a glass negative. But it is not legitimate in either case to issue the results as "absolutely untouched."

With regard to the plates shown by Dr. Diamond (*he showed no prints from them*), one of them, the cathedral door, was, to my certain knowledge, worked upon by the engraver. It had been produced by direct deposition on the film, and the copper solution had so damaged it in the upper part that we cut it down. When printed from it produced a black mass. Of the other plates shown by Dr. Diamond one was a matrix, which was certainly not in its pristine condition as it came from the mould. It had been finished by the engraver for the purpose of producing the printing-plate. The other plate was coarse in grain, and could not be said to be a fine art production. It bore evidence of engraver's manipulation. The surface was certainly not a facsimile of the mould, or I do not know what electrotyping is. It would have been more correct if Dr. Diamond had submitted prints from his plates. I must say, after his strong expressions, the upshot was a decided case of *ridiculus mus.*

There are two statements in Pretsch's letter which I must touch upon. I re assert that he claimed to be what he was not, the Manager of the Imperial Printing Office, Vienna. In his paper, read before the Society of Arts in 1856, he says plainly: "Having been for many years Manager of the Imperial Printing Office, Vienna." He does not, as now, say one of the foremen; and he does not venture to say "the chief foreman." So far from Councillor Auer consulting him on the general affairs of the establishment, that gentleman was only too glad, on Pretsch's own showing, to get him out of the concern. Indeed, Pretsch always represented Councillor Auer to me as his mortal enemy, and he painted him in the blackest of colours. And the statement in Pretsch's letter is the very reverse of the truth. I never received any consideration from my partners to leave the company. I refused to retire, although offered terms to do so. Those terms were simply ridiculous, and the most under-handed means were employed to force me into acquiescence. I proposed alternative terms: Either £250 down and a free licence to work the process, or £500 cash without licence. These terms were not accepted; and, to force me at length into theirs, they filed a Bill in Chancery. They failed, and an end was put to further litigation by a compromise entered into by my solicitor with Messrs. Fry and Loxley on behalf of the plaintiffs They agreed to pay £150 of my costs, and to return my policy of insurance. After this Carlton, Fenton, and Pretsch re-formed the company, but it did not live very long.

Beyond the receipt of my salary as a managing partner—and even that was not fully paid to me—I derived no pecuniary benefit whatever from the concern, or from any one connected with it. I neither asked nor expected anything for promoting and constructing the company. I worked because my heart was in the thing. And I can look back upon a season of great trial with the satisfaction that I did my duty with a sincere desire to benefit every one connected with the concern, including even Pretsch, until I found that the latter was endeavouring to undermine me by the most unscrupulous means. Of all the plaintiffs, only one, Mr. John Swainson, of Preston, had the manliness to come forward, some years back, and express his regret for the course which was taken. I at once gave him my hand, and agreed that between us "byegones should be byegones."

I could write an instructive history of the Photo-galvanographic Company from the materials in my possession. At present I content myself with saying that the final result was, in my experience, a signal instance of how the weak, by the help of God, may confound the strong.

Apologizing for this lengthy communication, I am dear sir, yours truly, DUNCAN C. DALLAS.

London, *June* 21*st*, 1870.

[We have been compelled to eliminate from Mr. Dallas's letter some lengthy details in regard to the Chancery suit, which make too heavy demands on our space, in reference to matters of scarcely general interest.—Ed.]

Sir,—Your leading article of last week gives, I consider, an impartial summary of the discussion relative to "Paul Pretsch and Photo-galvanography," which has occupied a large share of attention, both in your own pages and at recent meetings of the London Photographic Society. I am, however, desirous of removing the impression that Mr Dallas's remarkable statement was written at my request, and, if you will permit me a few words of explanation, I will endeavour to set this right by a brief narrative of facts.

In one part of your leader you say, "Mr. Duncan Dallas, an associate of Pretsch's in the Photo-galvanographic Company, then, at the request of the Secretary of the Photographic Society, gave a resumé of the history of Pretsch's operations, and imported into it a degree of personal animus which, we must confess, we wish had not been manifested." I quite coincide in your opinion, and for this reason, as well as from the great length of the communication offered to me, I did not insert it in the Society's Journal, where it would have occupied the greater part of two pages.

The circumstances under which Mr. Dallas's letter was written I will at once explain. At the March meeting of the Photographic Society a slip of paper was handed to me, just at the close of the discussion upon Mr. Courtenay's process, suggesting that I should "call upon Mr. Dallas to speak." Before I had time to take any steps in the matter, the President adjourned the meeting, and, Mr. Dallas coming afterwards to the table, I expressed regret that we had no opportunity of calling upon him to make a statement in the room according to his wish; but his intended remarks might, I said, nevertheless be brought to the notice of the members if he would present them in the form of a brief communication to the Journal. Mr. Dallas availed himself of this hint, but gave me so lengthened an account that it was altogether impossible to find room for it in the Journal, and I could only acknowledge the letter, and give the substance of it in a foot-note appended to the report of the discussion. The text of Mr. Dallas's letter was then addressed to yourself, and it appeared in your "Correspondence" columns of Ladyday last.

From that time to the present the writer has repeatedly supplemented his original statement by letters appearing in your own pages, and, at the Society's meeting of the 14th inst., Mr. Dallas made the curious admission that he was connected with the company which issued, as their first specimen, a print described as being "absolutely untouched," but which was, in fact, to his own knowledge, put into the hands of a skilled engraver, and, to some extent, worked upon for the purpose of improving the effect.—I am, &c., JOHN SPILLER.

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Talk in the Studio.

The Photographic News.—*Punch and Judy* has the following:—"The Photographic News. Is this another title for the *Illustrated London News*—Foe to *Graphic?* See? [Ed.—Our contributor has offended in this way before, and been forgiven. Another outrage on our feelings like the above will ensure his dismissal without a character.]"

Test for Impurities in Alcohol.—The use of impure alcohol for the solution of aniline dyes has a marked effect on the colors. If empyreumatic oil is present, much of the brilliancy is destroyed; and the presence of aldehyde has a still more prejudicial effect, one quarter per cent. being sufficient to decolorize the violet dye in a very marked degree. A simple test for ascertaining the purity of the alcohol is to put some in a test tube with a little piece of caustic potash, when, if impure, the alcohol will become more or less yellow. Another test is to make two solutions of the color of the same strength (1 in 50), one with alcohol of known purity, and the other with the suspected alcohol, and then compare the intensity and shade of the solutions.

The Insoluble Aniline Colors may be made soluble in water by the following process. A solution of gelatine in acetic acid is first made of about the consistence of syrup, and the colors added gradually, stirring all the time until a homogeneous paste is obtained. The mixture is then to be heated over a water-bath to the temperature of boiling water, and kept at that heat for some time.

Dulwich College.—We have seen a very fine photograph of the New Dulwich College, by Mr. Wm. Strudwick, inaugurated on Tuesday by the Prince and Princess of Wales. This noble institution, founded three centuries ago by Edward Alleyne, an eminent actor of Queen Elizabeth's time, has just been very handsomely rebuilt, and Mr. Strudwick's photograph is an interesting memorial of the institution which Alleyne regarded as "God's Gift."

Mounting.—I have tried every way of mounting prints, but like my own way the best, which is this: Take them from the water and lay them between two clean white cloths, which will absorb the water; then, while moist, put them on a neat pile, care being taken to have them even. Then paste, and there will be no danger of paste getting on the edges, and you will not have to put in your tongue to lick it off, as I have seen many do.—R. F. Channell in *Philadelphia Photographer*.

Plates Slipping off Dipper.—To recover a plate from the bath, when by accident it gets off the dipper, take a clean straight stick of hickory, a few inches longer than the depth of the bath, cut a V shaped notch in one end, split it up a few inches from the centre of the notch, spring a small rubber band round the stick an inch from the end. The notch being set over the upper edge of the plate, a light push downward will force it into the split, and the elasticity of the rubber will hold it there. The bath need not thus be disturbed any more than by passing the dipper up and down. The film need not be destroyed more than half an inch from the edge, and much vexation and valuable time and patience be saved. This dodge may possibly be old to some of your readers. It is original here within the last few days, and I give it as a free offering to such of the craft as are not already too smart to learn anything new.—J. Lee Knight in *Philadelphia Photographer*.

Permanganate Intensifier.—Mr. T. C. Lawrence, writing to our *Philadelphia* contemporary on our permanganate intensifier, says:—"I find it does better than anything I have used. It is better to use it in two different solutions; make one very strong, and the other weak. Use the strong solution for weak negatives, and the weak solution for negatives that require only very little strengthening. Do not pour the solution back into the bottle, but wash it off over the sink."

Pantatype (type for all), the *Stationer* says, is the name given by Messrs. Schonert, at Leipzig, to a new invention which is represented to change all graphic works executed for copper engraving and litho-press into raised plates, that may be immediately used for ordinary letter-press printing. The plates are said to be clear and durable.

Tinning of Iron Without the Aid of Heat.—J. B. A. Daubie, in the *Moniteur*, states that the tinning of iron in the cold cannot succeed at all, unless the bath used for that purpose contains, in solution or suspended, an organic substance like starch or glucose, although no precise scientific explanation of this indispensable condition has been hitherto given. The *breveté* employs the following bath:—To 100 litres of water are added 3 kilos. of rye meal; this mixture is boiled for half an hour, and next filtered through cloth; to the clear but thickish liquid are added 106 kilos. of pyro-phosphate of soda, 17 kilos. of protochloride of tin in crystals (so called tin-salt), 67 kilos. of neutral protochloride of tin, 100 to 120 grms. of sulphuric acid; this liquid is placed in well made wooden troughs, and serves more especially for the tinning of iron and steel wire (previously polished) for the use of carding machines. When, instead of the two salts of tin just named, cyanide of silver and cyanide of potassium are taken, the iron is perfectly silvered.

His Photograph.—A city gentleman, having his photograph taken, insisted on assuming a judicial aspect. Knitting his brows, and folding his arms, he looked as serene as a whole bench of magistrates. He went away delighted, but returned the next day. "Mr. Black," said he, "my wife don't like this; now, if you just unfold my arms, it will be all right."—*Family Herald*.

To Recover Gold from the Toning Bath.—It may not be generally known, that all the gold from old toning baths can be very easily recovered, in the pure metallic state, by merely inserting in the bottles holding them a strip of tinned iron. The gold is deposited upon the surface of the tin; by bending the tin, the gold drops off from it in scales. This appears to us to be a better method of recovering the gold than the use of protosulphate of iron. We do not use it ourselves, however; we never throw away a toning bath.—*Anthony's Bulletin.*

Attempted Suicide by a Photographer.—A determined attempt was made by a travelling photographer, named Robert Richardson, to commit suicide shortly before nine o'clock on Monday morning last. Richardson is the proprietor of a caravan, in which, for some time past, he has carried on his business on a piece of land in the neighbourhood of Ann Street, London Road, Brighton. During the past fortnight he has been drinking very hard, and had been suffering from the effects of *delirium tremens.* On Monday morning, while his wife went out to get some water for domestic purposes, he cut his throat with a razor. Assistance was immediately called in, and he was taken to the hospital. Upon examination, the wound was found to be extensive, but not deep. Richardson was very violent at the hospital, and endeavoured to put an end to his existence by strangling himself with the bedclothes, thus rendering great precautionary measures necessary. He is about forty years of age, and we are informed that just before he cut his throat he ran after his wife and made use of threats towards her. He lies in a very precarious condition.—*Brighton Guardian.*

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To Correspondents.

F. L. B.—The crapiness of which you complain is due to the presence of too much water in your collodion, or, in other words, to the use of ether and alcohol insufficiently rectified. It is probable that excess of somewhat weak alcohol has been used. Equal parts of ether, of a sp. gr. of ·720, and of methylated spirit, sp. gr. ·820, will generally give a satisfactory collodion; but if, as you say, you have used two parts of rectified spirits and one part of ether, the collodion will probably contain too much water. The collodion once made, you cannot remove the water; but you may use up the collodion by mixing it with another good sample. You may also, to some extent, modify the defect by letting the film set well before immersion in the nitrate bath.

M. R.—Your friend's instructions as to the use of bicarbonate of soda in neutralizing a bath have misled you curiously. The idea that you must add the soda solution until there is no more effervescence is altogether an error, as there will be constant effervescence on adding it until all the silver is precipitated as a carbonate. The proper plan is very simple. Make a ten-grain solution of bicarbonate of soda, and keep it for use. Add of this a few drops at a time, shaking the bottle containing the silver solution, and then allowing it to stand a few minutes. Continue the addition until there is, after standing, a slight permanent turbidity, which will show that all the free acid has been neutralized, and a trace of the nitrate has been converted into carbonate of silver. Now place the solution in the sun for a few hours—or, if possible, a few days—then filter, and try a plate. It is probable that the bath will work clean and bright at once; if not, add a slight trace of dilute nitric acid.

D. R.—In printing with collodio-chloride of silver on opal glass we prefer to work on the glass itself without any substratum. Take dilute albumen, consisting of one part of white of egg to three or four of water, and apply an edging about one-eighth of an inch wide all round the glass; when that is dry, coat with collodio-chloride. Allow the film to set thoroughly. Then dry by a dull fire, and print as soon as the film is cold again. Tone in an old weak gold bath. Fix by immersion in a hypo bath, containing one part in eight, for five minutes; then wash under a tap for five or ten minutes. Plates so treated will be quite permanent. There are two causes for films splitting: one is the use of a very tough contractile collodion, the other the use of a collodio-chloride which has become somewhat decomposed with age.

Rectangle.—A triple lens has no advantage over a rapid rectilinear. If you have the latter you will not need the former, either for copying or architectural work.

Pastel.—There are several formulæ for development printing in our Year-Book for 1869, and you do not state to which you refer. It is probable, however, that the yellowness to which you refer arises from the use of old hyposulphite solution for fixing, or to the immersion of the print in the fixing bath after development without previous washing. Solomon's formula for developed prints is a very good one.

L. R. T.—For dry-plate work we should recommend 2 grains of iodide of cadmium, 2 grains of iodide of ammonium, and 2 grains of bromide of cadmium. The collodion will be in good condition for use three or four weeks after mixing, and will keep good for twelve months. About 5 or 6 grains of a somewhat powdery collodion, and equal parts of ether and alcohol. As a rule, we have found that a collodion which worked well wet will work well dry; but for dry work more bromide is desirable.

R. D. S.—Various methods have been proposed for increasing the intensity of varnished negatives. The method to which you refer as having been proposed by ourselves has always answered well with negatives treated with a spirit varnish. First moisten the film with spirits of wine, then apply tincture of iodine, containing four grains of iodine in an ounce of spirit. As soon as the film acquires an olive tint, rinse with spirits of wine, and again varnish, and dry with heat.

J. W. (Hurst).—It is a somewhat difficult thing to give any very trustworthy advice in relation to the defects of a commercial collodion the nature and preparation of which is kept secret. Judging from the appearances of the print you enclose, the collodion is over-iodized, and would be improved by the addition of, say, one-eighth of its bulk of plain collodion. As a rule, when you purchase a collodion in two solutions, do not mix more than will be sufficient for three or four months' use. In this case you will do well to write to the manufacturer and ask his advice. 2. The white opaque mark on your plate after varnishing is due to the use of insufficient heat. Take care that the plate is heated evenly all over, and that it is kept near the fire until the varnish is quite dry. The white mark is due to the varnish having become "chilled" in that part.

J. M. P. (Hartlepool).—Very much depends on the kind of studio you desire, and the kind of work you intend to do, as regards the alterations to be made. For a convenient studio for all purposes of ordinary portraiture we should choose the breadth of the present building, 23½ feet as the length of the studio, making the width from 12 to 15 feet. The hipped roof at the north-east end we should convert into the principal side and top light, making the ridge of the skylight 14 feet high, and the eaves about 8 feet high. Let the ridge be about 10 feet from the side. With 5 feet at each end opaque, both side and roof and the remainder glass, you will have a fine light, which will enable you to work at both ends, and you will not need any glass in the other side. This alteration will give the least trouble, and will give you a good studio, and plenty of space for other operating rooms.

Thos. Gulliver.—Thanks. We will forward proofs. Thanks for card, which is very good.

F. M. D.—The new tissue of the Autotype Company is, we believe, ready. No charge is made for permission to see the operations. Write to the secretary for full particulars.

Photographs of Children.—A correspondent asks if any new formula, of French origin, exists for securing rapidity in taking portraits of children. We know of nothing new and trustworthy in this direction. Various formulæ have been suggested from time to time; but the most trustworthy method of securing rapidity consists in the use of a nitrate bath in good condition, nearly neutral; collodion in good condition, containing a good proportion of bromide; a lens of large aperture and short focus; the best light that can be secured; and a strong iron developer containing (say) fifty grains of protosulphate of iron and twenty minims of acetic acid in an ounce of water. With these conditions, patience, and skill, good results may be obtained with very short exposures.

Photographic Rambles in South Wales.—In our last, p. 280, second column, sixteen lines from bottom, for "Gout Street" read Goat Street; twelve lines further on, for "Meath" read Neath; and seven lines further on for "Mr. T. H. Vivian" read Mrs. T. H. Vivian.

Several Correspondents in our next.

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Photographs Registered.

Mr. N. Syrus, Balls Pond Road,
Photograph of G. Leybourne.
Mr. W. R. Church, Calne,
Photograph of Marquis and Marchioness of Lansdowne.
Photograph of Marquis of Lansdowne.
Photograph of Lord E. Fitzmaurice, M.P.
Messrs. Appleton and Co., Bradford,
Two Photograph Groups of Wesleyan Ministers, &c.
Mr. J. Stokes, Ipswich,
Photograph of Rev. A. H. Synge.
Mr. J. Chaplin, Guildford,
Photograph of Monumental Brass of M. Abbott and his Wife.
Mr. Harrison, Newcastle, Staffordshire,
Photograph of St. John's Church, Keele.
Mr. P. Hartley, Manchester,
Photograph of Exploded Boiler.
Mr. White, Reading,
Nine Photographs of Bishop Crowther.
Mr. J. Welch, Landport,
Photograph of Charles Dickens' Birthplace.
Mr. S. Brooks, Rochester,
Two Photographs of Charles Dickens' Library, Gadd's Hill.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 617.—*July* 1, 1870.

CONTENTS.

	PAGE
Photography and Realism	301
Photography as Applied to Etching	302
The Photographic Exhibition at Paris	303
Photographic Rambles in South Wales. By Thomas Gulliver	304
On a Permanent Toning Bath. By H. T. Anthony	305
On Errors of Perspective in Portrait Photography. By Dr. H. Vogel	305
Enamel Photographs—Burnt-in Photographs. By Prof. J. Towler, M D.	307
Enlarging of Photographs with the Ordinary Camera	308
Correspondence—"Untouched by the Graver"—Cost of Patented Apparatus—Ridge Roof *v.* Sloping Front Studios—The Pretsch Controversy	309
Talk in the Studio	311
To Correspondents	312

PHOTOGRAPHY AND REALISM.

It is an excellent thing for individuals or communities to have a scapegoat upon which all superfluous wrath, arising from various causes, may be vented. Most readers remember the story of an irate gentleman coming from the office of a lawyer where he had had considerably the worst of the negotiation, who, finding a boy whom he had never seen before, sitting waiting on the stairs as he rushed from the interview, gave the poor little urchin a smart box on the ear, exclaiming, "Get out of the way! Confound you, you're always at that!" and thence made his exit a calmer and happier man. Of late years, photography has been the favourite scapegoat for a large class of art writers. Photography is answerable for an alleged decline in art; photography has vulgarized the public taste; photography has destroyed the occupation of portraitists. It has introduced, it is said, a taste for realism, for literal detail in painting, poetry, and the drama. Expression, thought, inner life, have all been sacrificed, that buttons and frills might be elaborated with a minuteness and obtrusiveness surpassing that of nature.

We have often before noticed these charges, and shown their fallacy; but we have been especially amused by the contradictory character the charges assume in two essays before us. The writer of a clever essay on the "Picturesque in Literature," in a recent number of the *Gentleman's Magazine*, regards as the leading trait in the literature of the day a "taste for portraiture—the taste, that is, for picturesque writing." This may be admitted without question; but those who have affirmed that the tendency of photography was to reduce art to the dead level of dull detail will be surprised on reading the remarks which follow. The writer says:—"Photography is the sovereign art; and I know no more striking peculiarity of the literature of the day than its tendency to become photographic. Poetry and fiction are photographic; history and politics are photographic; art is photographic." There may be much in this; but mark how strangely this photographic tendency is illustrated: the next sentence runs, "Even Venus must be tinted to make a sensation." It will be a new idea to many persons that the tinting of marble statuary is a vice of a photographic nature. Somewhat hard, this, upon poor photography, the youngest-born of the sisterhood of the arts! But worse follows: the writer of the article in question gives, as an especially fitting example of the photographic tendency in literature, the Lives of the Chancellors, by Lord Campbell, and, speaking of the noble lord as a biographer, he says:—"He is a petty, garrulous, old gossip, frequently malignant, and hardly ever honest for ten pages together," and adds: "Lord Campbell thought of nothing, cared for nothing—neither for his own reputation nor that of his subject—but the lights and shades of his photograph." Photography has been charged with justice without mercy, truth without flattery, undiscriminating fidelity; but to be used as the type of a biographer who is "malignant, and hardly ever honest," is surely too bad.

In the eyes of the writer to whom we have just referred, photography is chargeable with the tendency to sensationalism, to the production of effect without regard to truth; but, in the estimation of another writer, it is chiefly chargeable with a petty, unimaginative realism, which is utterly destructive of true art. Mr. Henry O'Neil, an Associate of the Academy, and an able painter, in a pamphlet on "Modern Art in England and France," issued about twelve months ago, laments the decadence of some phases of art, and unhesitatingly charges photography as one of the causes of the declension. He says:—

"The discovery of photography has had a great influence on modern art, and, unfortunately, it has been as baneful to literature, music, and the drama as to painting. In the latter, we find people enraptured by the obtrusive display of details which never could have affected the spectator in presence of the living scene. In literature, there is a continual striving to describe, with elaborate minuteness, the little peculiarities occasionally met with in life, rather than to rivet the mind by the truth of the conception and the strength and beauty of the language. In music, again, attempts are made which, however feeble and vulgar, are eagerly accepted by the ignorant as an evidence of genius, to imitate the sound of living nature; forgetting that music is a spiritual language which expresses the feelings of the heart, and not the perception of the senses. Lastly, if we turn to the stage, we shall find that the success of a play depends more upon the realism of the scenery and costume than on the interest of the story and the beauty of the language; so that a Hansom cab or a real pump introduced on the stage will receive more attention from the audience than would the presence of a great actor, and the real water flowing from the pump excites more rapturous applause than would be bestowed on the divine words of Shakespeare. And even as the presence of such petty realism destroys the illusion which it is the purpose of the stage to create and preserve, so, in painting, the close imitation of the surface of nature fixes the attention on the means employed, which, in all really great work, are always concealed. Moreover, the labour is entirely vain, for the spectator is thereby made all the more aware that it is only a picture he sees before him, and the dream, unfolded by the spirit of the scene, vanishes for ever."

All this, as a very slight amount of reflection might have shown the author, is utterly unjust and untrue, especially in the assumption that realism in other than pictorial art is due to photography. The imitation of the sounds of living nature in music is a device much older than the art of photography, as thousands of old and middle-aged persons can remember who were bored and irritated in their youth by the "cries of the wounded" in the "Battle of Prague," whilst the realism on the stage was satirized by Charles Dickens at a date when photography as an art had not been published to the world. Most readers remember the enthusiasm of Mr. Vincent Crummles as he described to Nicholas Nickleby the effect he anticipated from the introduction of a real pump and two washing-tubs into a piece written for the purpose, and announced on a poster, thus: "Real Pump!—Splendid Tubs!—Great Attraction!" Photography, Mr. O'Neil should remember, does not introduce incongruous detail into a picture; it merely depicts such detail as the subject—natural or arranged—may possess; whereas the obtrusion of effects of mean realism in music or the drama, or any other art, is a deliberate act of the artist. He proceeds:—

"When photography came first into notice, we were all fascinated by the marvellous accuracy with which every detail of form was rendered, and, with the new-born wonder of children, we forgot the absence of higher truths. However imperceptible in its action, constant change is the law and the necessity of nature. Its motion is perpetual, and even as in a moment of mental repose we hear the tick of the clock, so in a moment of breathless silence the soul feels the passing footsteps of time. The want of this motion, or life, is painfully felt in photography, which produces the image as if it were made of stone; even when the objects represented are the moving clouds, the fluttering leaves, the waving grass, or the running stream. We are impressed with the silence of death, and the murmur of life is unheard. Nay, even in its illustrations of buildings, accurate as they are, they look cold and ghastly in their hard realism, as if utterly beyond the influence of time and change. More especially is this defect apparent in rendering the character of the human face with its quick play of expression and fleeting modulations of form and colour. It has been said, as regards portraiture, that photography would soon supersede art. But never was a fear more childish and absurd, for the highest efforts of science in that direction will ever be poor in comparison to the slightest efforts of human ability."

Again we are compelled to protest against thoughtless writing. The "highest efforts of science will ever be poor in comparison to the slightest effort of human ability," and therefore it is childish and absurd to suppose the former will supersede the latter. We cannot say "never was a statement so childish and absurd," because, unfortunately, it has been made more than once before. But *is* it childish and absurd? The two things put in opposition are not in antagonism. Science, as embodied in photography, is dependent upon human ability in precisely the same way, if not in precisely the same degree, as painting; and as for the best of one never superseding the slightest effort of the other, it has already been done. Photography has superseded those slight efforts known as miniature painting, except in its highest forms, and has done real service to art and to mankind in such supercedure.

After thus summarily disposing of the art claims of photography, a little of the old familiar patronage of photography as a respectable copyist follows, and the author remarks:—

"Yet whilst I declaim against the influence of photography on art—fortunately declining, but unfortunately in too extreme a course—I cannot but regret that the science was not discovered earlier, so that we might have far better copies of the glorious works of the past than the art of the engraver has hitherto produced. I have lately seen some photographs, on a large scale, taken from the frescoes by Raffaele in the Vatican; and though the latter are in a dilapidated state, the photographs give an idea of the artist's power which no engraver has hitherto been able to produce. It is, indeed, utterly impossible to judge of the qualities of a picture from the knowledge obtained through engravings, or even painted copies, and no artist has suffered on this account more than Raffaelle. Three years ago I met at Rome one of our most distinguished artists, and I naturally asked him what he thought of Raffaelle's frescoes. He replied, thus: 'As yet I only know them from copies and engravings; but, judging from what I have seen by Raffaelle in other galleries, I should say that he is utterly unworthy of his great reputation, and I don't believe in him.' Confidently, and yet with the air of a martyr, he accompanied me to the Vatican, and at the sight of the first fresco he said, 'I now see why Raffaelle is called the Prince of Painters.'"

That photography does possess this rare value in reproducing a master's style in the copy it presents, in a degree impossible to any manual form of reproduction or translation, is truly one of its great charms; but because of this, or the acknowledgment of this, photographers cannot acquiesce when it is charged with degrading art and art taste, or with utter incapacity for any original form of art rendering.

PHOTOGRAPHY AS APPLIED TO ETCHING.

We have recently been favoured by Mr. Arthur Taylor, of Marseilles, with some unusually fine examples of etching. The fact that Mr. Taylor knew nothing practically, as he informs us, of etching in the ordinary way, and that these are first attempts, speak volumes for the excellence of the method by which such results are obtained.

The value of a really practical system of securing the aid of photography in etching cannot be readily estimated. Even for the simple purpose of transferring the design of the draughtsman to an etching ground it would be of immense value. Mr. Joubert, some months ago, showed us a series of illustrations to Hood's story of Miss Kilmansegg. The drawings had been brought to him, and he was asked if he could produce etched plates within a certain given time, to permit the publication of the work by the following Christmas. His reply was that the time mentioned would be scarcely more than sufficient to copy the drawings. This difficulty was met by an offer to bring the prepared plates with the design photographed on the ground. This was done, and the work was completed in time. But the mode by which the image was photographed on the etching ground was a secret, which Mr. Joubert himself did not know. Here is one illustration of the value of an efficient method of utilizing photography for etching purposes. But, besides its value in placing a subject in line on the plate, the plan in question has other merits: a photograph from nature being placed on the prepared plate, the continuous gradation may, with a little skill and practice, be converted into line, if the etcher have any facility in drawing. Mr. Taylor's examples before us are produced in this way by means of negatives from nature, and the result is excellent. Without entering into any comment on other methods which have been tried and found wanting, we proceed at once to give the details with which Mr. Taylor has courteously favoured us:—

Le Mas d'Azil (Ariège),
June 16*th*, 1870.

Sir,—You some weeks ago received a few specimens of etching in the production of which photography played an important part; and you have expressed a desire to have some particulars of the method employed.

The prints in question are from copper-plates, etched much in the usual manner, excepting that a photographic image had been impressed on the surface of the etching ground to serve as a guide to the needle.

The production of a photographic picture on a grounded or varnished metal plate can, of course, be accomplished in many ways, by the use of gum, gelatine, albumen, sugar, gum resins, &c., either as vehicles for the sensitive substances, or as a substratum for sensitized collodion. The spreading of such a coating on the greasy surface of the "ground" offers some difficulty, but this may be overcome and a perfect image obtained. The production of an etching on a surface so prepared is, however, a matter of considerable difficulty; for such coatings as have been been indicated not only offer a considerable resistance to that free passage of the needle which is essential, but have a tendency to chip, turning away small portions of the ground, and leaving the metal bare.

In the process about to be described these difficulties are overcome by the use of soap as a vehicle for a silver salt, with which it forms a sort of paint sensitive to light; and this soap, being decomposed in the subsequent fixing operation, leaves the image enclosed in a greasy film, which can neither chip nor offer any sensible obstruction to the needle of the etcher. The dark colour of ordinary etching ground being objectionable, a nearly colourless sort must be substituted; and, when copper-plates are used, the clearness of the photograph is much enhanced by silvering the plate. With steel or zinc plates this is, of course, omitted.

The plate to be operated on should be planished to as true a surface as possible; and, if in copper, polished with charcoal as usual, rubbed with whitening to remove greasiness, and then silvered with a mixture of chloride or phosphate of silver, cream of tartar, and whitening, made into a paste with water, and rubbed on with a cork. The plate will soon be covered with a film of bright silver, and is then to be washed clean and rubbed dry.

An etching ground composed simply of white wax and resin mastic answers very well. The proportions should vary according to the season or temperature, more mastic being used in warm than in cold weather. Two parts of mastic to five of wax are good proportions for cool weather. The wax is melted in a porcelain crucible (or some such vessel), and the mastic added in fine powder, with constant stirring; when the whole is perfectly liquid it must be allowed to rest and cool very gradually, so as to allow the solid impurities to settle; when the whole mass is solid, it must be removed from the vessel (which must be rapidly warmed for the purpose) in a lump, and all the impure portions carefully cut off.

This ground might, no doubt, be very well laid with a dabber, as usually practised, but the following method has been found to answer:—

Melt the ground with a very gentle heat, and, having set the plate perfectly level on a stand, and warmed it with a lamp, apply the melted ground with a soft camel's-hair pencil in as thin and even a coating as possible, great care being taken to avoid dust, bubbles, and over-heating. Hot water arrangements for melting the ground and for heating the plate would be useful, especially for large plates.

The sensitive coating is composed of tri-basic phosphate of silver, precipitated from the nitrate with excess of common phosphate of soda, and of white curd soap. What in England is known as "Castile soap" would probably answer very well; but if a soap were prepared expressly, free from chlorides, it would doubtless give the best results. About equal weights of the two ingredients are made into a paste with water, and well ground on a slab with a muller and horn palette knife, so as to form a thin paint, with which the grounded plate is to be evenly coated, applying it with a very soft brush. Some little difficulty may be experienced in obtaining an even coating at once; but, in this case, a second coat may be applied as soon as the first one is dry, the composition becoming insoluble when once dried, especially if warmth has been used to hasten the drying. Very slight warmth must, however, be used, to avoid melting the ground. Only as much mixture must be made as can be used at once, for it very soon becomes unfit for use. Of course this preparation and coating of the plate must be done in the dark room.

The plate may now be exposed under the negative, means being provided for watching the printing without disturbing the relative positions of the two. The phosphate of silver gives a black or dark grey image, which is wanting in vigour excepting with intense negatives. There is room for improvement in this respect. Dipping the coated and dried plate in a saturated solution of bitartarate of potash would probably increase the vigour; or some other salt than the phosphate might be tried—the oleate, for instance; but it must be observed that all salts of silver will not mix intimately with soap. It is in the photographic printing that the importance of having the plates true is evident, the parts where the contact is imperfect being wanting in definition. Perhaps, however, printing in direct sunlight or n the bottom of a box would correct this to a great extent.

A satisfactory image having been obtained, the plate must be varnished on the back and edges. Gum benzoin dissolved in alcohol answers for this purpose, as well as for the general work of stopping out during the biting. The ordinary stopping varnish of bitumen in turpentine, however, would probably be as good, if not better. The varnish being dry, the print must be fixed by plunging the plate in water containing two or three per cent. of nitric acid; this dissolves the unchanged phosphate, and, as soon as the yellow colour due to this salt has entirely disappeared (which can only be well seen in white daylight) the plate is thoroughly washed, and allowed to dry. The image remains black, and, as has been before stated, being only held on the plate by a greasy film, is effaced by very slight friction.

Sometimes there are imperfections in the ground; those allow the acid used in fixing to act on the metal, producing, if the plate has been silvered, a grey deposit of silver in such places. Should this occur only to a limited extent, the plate must be immediately washed, allowed to dry, the defective places stopped out with benzoin varnish, and the fixing completed in the acid bath. But, should the defects be numerous or important, it will be best to clean the plate with caustic potash, and to begin the operation anew.

The image being now fixed, the plate may be worked on with the needle in the usual manner, taking care, however, to use a "bridge" for resting the hand, and not to use a brush for dusting. If the plate has been silvered, it will be prudent to use rather weak acid for biting, as the action seems to proceed faster in this case than with a plain copper-plate. To those accustomed to working on a smoked ground, the white lights of the photograph may at first seem a little strange, but this is a mere matter of habit. A photograph on paper, for consulting during the work, is a great help.

Such, sir, is the process which has given me the best results, although it has not been arrived at without a good many experiments. It is far from perfect, but yet it is in a state to be practically used; and, as I know some of your numerous readers are accomplished etchers as well as photographers, I hope they may be induced to give it a trial, and will favour us with the result of their experience.

I may state, in conclusion, and as bearing on this subject, that I have made some promising trials with "soft ground" or "pencil etching," simply using a faint photograph on plain salted paper instead of the usual pencil sketch on thin paper; and I am persuaded that artists acquainted with the practice of soft ground etching could in this way produce very rapid and satisfactory results.

I need hardly mention that in using either this last method or the process for needle etching, the artist is free to alter, omit, or add whatever he may judge objectionable or wanting in the work of the camera.—I remain, sir, yours sincerely,

ARTHUR TAYLOR.

THE PHOTOGRAPHIC EXHIBITION AT PARIS.

[FROM OUR OWN CORRESPONDENT.]

The Exhibition of the French Photographic Society of this year is certainly an improvement on that of 1869. Not only are the pictures exhibited of a finer and more varied description, but the collection is in itself decidedly more attractive and inviting. This latter circumstance is due principally to the fact that the specimens of helio-engraving, which were so numerous last year as to occupy fully one-half of the available space, are, on the present occasion, more limited in number, and do not, therefore, monopolise the best portions of the walls. In making this remark I do not by any means wish to underrate the value of mechanical printing processes, but merely desire to point out that discretion should be used in limiting the number of specimens shown, and especially of such processes which differ but very slightly from one another, and are, moreover, very far from producing even mediocre results.

As I have already remarked, the walls of the large hall, in which the greater portion of the collection is situated, present a very attractive sight. At a rough guess I should estimate the collection to be scarcely as large as the one in Conduit Street last year, although the catalogue shows upwards of eleven-hundred pictures. Besides the principal hall, there is a darkened vestibule for *vitrines* and transparencies, and a small theatre for the exhibition of photographs by means of the oxy-hydrogen lamp of Tessie du Motay. Every hour a demonstration of this kind is given, the *séance*, indeed, forming one of the most popular features of the exhibition.

The catalogue—which, by-the-bye, might be considerably improved in its arrangement—shows the number of exhibitors to be about one hundred and twenty, and of these a large proportion are foreigners. Twenty-one Germans and seventeen English have sent pictures, while Spain, Portugal, Russia, Poland, India, America, &c., have representatives. The prizes, which are promised, have not yet been awarded, but their adjudgment is daily expected.

The most attractive portion of the exhibition is, undoubtedly, the larger portraits—not enlargments, but those taken direct. M. Adam-Salomon, whose name heads the catalogue, has, unfortunately, been ill for some time past, and has been unable, therefore, to forward any of his unique productions. This is much to be regretted, as it would have been exceedingly interesting to have compared the work of the *maestro* with the specimens exhibited by his numerous disciples. Adam-Salomon being absent, we look round the room for other worthy candidates for the portraiture medal. But a very little time is required to search out the more deserving, and three names may at once be cited: those of Mieczkowski of Warsaw, Blanchard of London, and Reutlinger of Paris; if a further group of three is to be named, it is Kurtz of New York, Kampf of Aix-la-Chapelle, and Bieber of Hamburgh. In making this selection I have not taken into account the charming little studies of Hubbard, with which my readers are well acquainted, as they do not come within the denomination of portraits.

Were I asked to make a more critical and decided selection, I should not, I think, alter the arrangement of the three first names above quoted. Mieczkowski is by no means a name new to photographers, for, if I remember rightly, his pictures in the Paris Exposition Universelle of 1867 were the subject of universal admiration. The pictures he now shows are, for the most part, absolutely without reproach: so soft, so delicate, and yet so bold, that they seem to be the perfection of portraiture. The main difference between Blanchard's pictures and the above appears to be principally in the matter of retouching; Mieczkowski, although he retouches but little, evidently uses the brush with more freedom than Blanchard, while Reutlinger, again, carries the practice still further. Indeed, if I dared make a suggestion, it would be to the effect that Reutlinger's portraits, plastic and beautiful as they are, are in some cases rather too much worked upon, the skin presenting an almost metallic appearance, instead of its original soft and delicate aspect. Blanchard's pictures are six in number, of which five were exhibited in Conduit Street last November. Reutlinger has three frames full of brilliant examples.

Kurtz, of New York, shows some beautiful Salomonesque pictures, as likewise a varied collection of other types; the tones of his prints are admirably suited to the styles he has adopted, among which are some pretty carte-de-visite busts in the well-known style of Fritz Luckardt, and some very excellent cabinet pictures. Kampf, of Aix la Chapelle, shows a frame of Salomon pictures, including two or three of very considerable merit; and Bieber, of Hamburgh, has two frames of large portraits, displaying much artistic taste and skilful manipulation. Warwick Brookes, of Manchester, takes high rank as a portraitist, and certainly stands next to Blanchard among English exhibitors. Colonel Stuart Wortley's portraits can scarcely be the same he exhibited in London last winter, or, if from the same negatives, the prints must be inferior, as they do not show to the same advantage.

Berthaud, of Paris, has some fine portraits of large dimensions; Gondy and Egey, of Austria, also excel in large portraits, and show also a large collection of brilliant cartes-de-visite. Gertinger's enlargements are exceedingly good, as also are those of Melchion. Wane, of the Isle of Man, shows some careful studies of very high merit; and Lewis, of the same place, a collection of portraits which leave very little to be desired.

Fritz Luckardt's cabinet busts are very fine, and superior even to his widely-known cartes-de-visite; his style is similar to Reutlinger's, but, while freer and bolder, his pictures lack somewhat of the delicacy of the Parisian artist. Some enlargments produced by Monckhoven's apparatus are also shown. Matzner, of Vienna, sends a large collection of cabinet pictures with natural and fancy backgrounds; they are for the most part very charming, but in some cases the backgrounds are too marked and conspicuous, a fault observable also in the pictures of Koller, whose prints are similar to those of Matzner; instead of being subordinate to the portrait or group, the details of the background occasionally stand out too prominently, and appear, indeed, to have been crowded into the picture.

Mrs. Cameron's well-known studies find a place on the walls. Lafosse, of Manchester, Brownrigg, of Dublin, and Slingsby, of Lincoln, likewise send portraits. Good work in portraiture is also shown by the Marquis of Maison, whose cabinet pictures are very fine; by Chambay, whose examples, mounted tastefully upon coloured tints, appear like fine engravings; by Borntrager, of Wiesbaden, and by M. Franck, and M. Marconi. M. Pagliano sends a series of portraits with backgrounds specially devised by himself, representing a screen or wall of a subdued character; the effect is in most instances very good, but the portraits scarcely exhibit a sufficient amount of relief. M. Relvas is not so successful in portraiture as in the depiction of animals: M.M. Siebe and Wignand show some creditable specimens.

In my next paper the merits of landscape photography shall be discussed.

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PHOTOGRAPHIC RAMBLES IN SOUTH WALES.

No. 2.

BY THOMAS GULLIVER.

Oystermouth Village—Mumbles Island—Langland Bay—Caswell Bay, etc.

The pretty little village of Oystermouth, situated on the south side of Swansea Bay, is the centre of attraction to visitors and tourists who may be travelling this way. It is about five miles from Swansea, and very easy of access by the Oystermouth and Swansea Railway, the trains on which are propelled by horses, so the pace is slow and sure, thus allowing ample time for the traveller to admire the beautiful scenery he passes on his way. The fares are very moderate—only eightpence for return ticket to and fro.

The object that first arrests attention is the noble ruins of Oystermouth Castle, seen on the rising ground to the right hand. The person who has charge of the ruins expects a small silver coin for the trouble of showing visitors round and describing the interior. The castle is of Gothic Medieval military architecture, and in excellent preservation. The chapel is interesting; it is in an upper storey at the north east end, and contains some frescoes. Its foundation is ascribed to Henry Beaumont, Earl of Warwick, in the reign of Henry I., by one of the Lords of Gower. It was made over to the Crown. King John gave castle and lands adjoining to the Lords of Brecon. Then they came by marriage to the noble family of De Mowbrey; from them to the Herberts; and then to the family of the Somersets, in which they are now vested in the person of His Grace the Duke of Beaufort. A nice view of it can be obtained from a lane leading to the front entrance. Placing the camera a little to the right of the gate, a convenient stone wall, on the left, is a nice spot to pitch the tent. The best time of day is about two in the afternoon. Nearly one half of the ruins is in shade, and a hedge row and trees in the mid distance give long cast shadows on the meadow and lane. Another view may be had from the Langland Road, but the foreground is weak, and the ruins too much of a strait line. This will require a long focus lens. Another view is to be had from Colt's Hill. This will include the chapel, but must be taken in early morning to be well lighted. Near a quarry by Colt's Hill an excellent view of the village can be secured at the same time as the castle ruins, by merely turning the camera more to the front.

We will now leave the castle ruins, and return to the road leading through the village, which lies at the foot of the hills in a semi-circle for about a mile or so, to the Lighthouse on the Mumbles Island. At ebb tide a fine series of views may be obtained, with sloops, brigs, and fishing boats left high and dry on the beach. Near the lighthouse is a casemate battery armed with five 98-pounders. The lighthouse and battery may be visited at low water; also a remarkable cave known as Bob's Hole, the retreat of a noted smuggler in time gone by.

The visitor can now pass through the Sound, and, by going round the point, get to Bracelet Bay (or Broadslade Bay on the ordnance maps). Here is a fine beach for bathing, and excellent studies of rocks; a cave at the upper point, when clear of sand, is well worth photographing.

Ascending the hill by a gentle slope, we arrive at the Coastguard Flag Station, and a most splendid view is to be had here on a fine summer's day. The still blue waters of the Channel in front, and on the right and left hand, dotted over with the countless numbers of vessels of all nations homeward and outward bound; the distant hills of Devonshire in front; about twenty-five miles away the white houses and villas of Swansea on the left, backed by the hills at Cwmavon, form altogether such a picture as is well worth coming a few hundred miles to see.

Leaving the lighthouse in the rear, we follow a path near Sea View Cottage, and come again to the village, and taking the left hand road by the "White Rose" Inn we are on our way to Langland and Caswell Bays.

Leaving the village of Oystermouth for a time, we now take the road near the "White Rose" Inn, and, when well beyond the castle ruins, take a turn of the road to the left hand, and, keeping this for about half a mile, we come to

Langland Bay.

Here the visitor will find a fine selection of views. A large marine villa, called Crawshay Castle, will be the first object of interest for the morning light. A general view of the Bay can be had from the hill near the Mumbles Road. Underneath the hill are fine groups of rocks; these, with the sands, will compose nicely for that class of picture. At low water a great variety of sea shells and curiously formed sea weed may be gathered to show to friends at home.

A foot-path on the margin of the Bay, near the sea side, for about a mile, will conduct us to

Caswell Bay.

Here nature has given a rougher and wilder character to the scenery, and here, in the summer time, picnic parties are held; and no place I know could be better suited for their purpose. Fine clear springs of cool water trickle down the rocks in Freshwater Cave, and at the foot of the hill are plenty of large flat boulders to serve for tables and seats for the merry men and maids who meet to take "the cup that cheers," &c. The caves can only be photographed at low water, also the cliffs and limestone rocks. A general view of the Bay can be had from the hill overlooking the road about a quarter of a mile distant. The best time will be early morning and during high water, and on a calm day, as the breeze on the hill is on most days enough to make your legs tremble—the camera legs, I mean. I have found it a good plan to hang a stone by a small cord underneath the camera legs to steady the camera.

We can now face about, and take to the road before us, and, leaving the little village of Newton on our left, return to Oystermouth to refresh the inner man.

ON A PERMANENT TONING BATH.

BY H. T. ANTHONY.

HAVING used the same solutions for toning for four or five years past, and finding the bath always reliable and uniform in acting, I think it desirable to be known by photographers generally.

The first thing to be done in preparing this toning bath is to provide a neutral solution of chloride of gold. This I do by adding excess of carbonate of baryta to a strong solution of chloride of gold. At ordinary temperatures and with occasional shaking the solution will be ready for use in three days. The strength of solution of gold is one bottle or fifteen grains of Anthony's chloride of gold to an ounce of water. This solution being ready, the bath is prepared as follows:—

In one gallon of water diffuse ten grains of fresh dry chloride of lime, thirty grains of air-slaked lime, one drachm of salt, and one ounce of the above neutral gold solution; shake them thoroughly together, and allow to stand for a week; the bath can then be used. Pour off the clear portion free from the sediment, and add one-quarter ounce of the neutral gold solution; stir intimately, and allow to stand a short time. Try a single print. If the bath tones grey and flat, the prints not acquiring the deep colour necessary in the shadows, add to the bath from five to ten grains of crystalline acetate of soda; this will correct the tendency to flatness. If now the prints tone too slowly, add from five to ten grains of bicarbonate of soda. By the judicious use of the alkaline materials generally used in toning and the chloride of lime, this bath can be used, as our experience shows, for years, making a great economy in the expense of gold. The probable reason why this bath continues to act is, that the gold, being already neutralized when added to the bath, needs no excess of alkali to produce that effect. The amount added in the presence of the free chlorine is not sufficient to reduce the gold to the metallic state, and the reduction is determined by the presence of the silver of the print. The moment the print is removed, the reducing action is arrested, and the bath remains without change.

It remains but to observe that no gold should be added to the bath but the neutralized gold described. The addition of the materials from time to time should be small in quantity. The chloride of lime, when needed, should never be added in quantity larger than ordinary pigeon-shot. In adding this, it should be moistened in the palm of the hand with a little of the toning bath, rubbed into a pasty consistence, and then washed off into the bath and thoroughly mixed with it. The bath should always smell perceptibly of free chlorine.

After using, it should be poured into the bottle in which it was mixed, and tightly corked.—*Photographic Mosaics.*

ON ERRORS OF PERSPECTIVE IN PORTRAIT PHOTOGRAPHY

BY DR. H. VOGEL.[*]

The Effect of Sloping the Camera.—In all the examples hitherto brought before the reader, the camera was employed in an upright position, and the line of sight was, therefore, perfectly horizontal. In practice, however, the photographer often uses his apparatus in a sloping position, as, for instance, in depicting a sitting figure; the head, hands, and feet are required to be as nearly as possible in focus, and this is best attained by a depression of the camera if the back of the apparatus is immovable.

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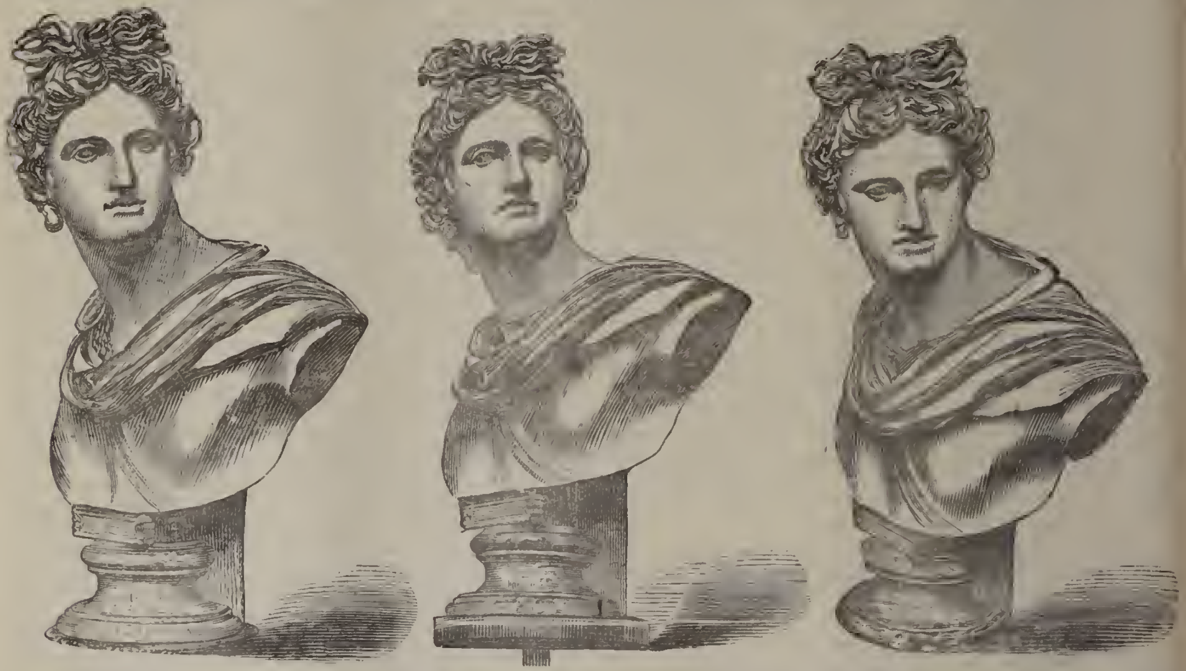
[*] *Photographische Mittheilungen.*

When an apparatus is used in a sloping position, errors of perspective of a totally different character to those hitherto alluded to are apt to arise. If the camera is depressed, the picture will have the appearance of the bottom half of fig. 11 (see page 139), in which the floor, feet, and chair (or, similarly, the head and lap of a sitting figure) appear larger from an elevated point, and therefore broader. Quite different is it if the apparatus is horizontal or sloping upwards; and to demonstrate this the more clearly, I have here given three views of an Apollo bust, all taken at the same distance, No. 1 being produced with a depressed camera, No. 2 with the apparatus in a horizontal position, and No. 3 with the lens sloping upwards.

Many will regard figure No. 3, which is taken in a manner frequently adopted in the depiction of living models, as a meaningless caricature; whether with reason or no we shall see hereafter.



In the first picture the figure is looking downwards, with its head bent; in the second the head is upright, and the eyes looking straight forward; and in the third the image is glancing upward, with its head proudly thrown back. In No. 1 the forehead is large, and the face tapers towards the chin, and assumes a pear-shaped form; in No. 3 the face is equally broad above and below; and in No. 2 we have the mean. To the breadth of shoulder apparent in No. 1, compared to Nos. 2 and 3, special attention does not require to be drawn.

Quite apart, however, from these prominent differences, there are marked characteristics in all three pictures which are of much greater importance than the discrepancies observed in the dimensions. Would anybody, for instance, recognise the immortal god of the sun, full of fire and anger, in the image No. 1. Truly it appears to turn the bust into ridicule; No. 2 is by no means a truthful representation of the ideal god; and, indeed, the only one that can be accepted as a worthy picture of Apollo is No. 3. In this instance, therefore, the camera sloping upwards has given the best results; and the reason of this is, on reflection, accounted for by the fact that the statue has been so moulded as to appear to the best advantage from below. In a picture thus taken it is clear that the head must appear smaller than that portion of the bust nearest the eye of the observer, and to overcome this disproportion the old masters not only modelled the proportions of their statues accordingly, but likewise executed the hollows, surfaces, and reliefs, of the work so as to appear to the best advantage from below. No wonder, therefore, that statues destined for placing upon high pedestals have a strange aspect when viewed on a level, and that photographs of them taken with a horizontal or even depressed camera should convey a false impression of the original. Let any one look through a collection of photographs of antique statues, &c., and the number of apparent errors will be found to be innumerable.

The three pictures illustrate, indeed, the story of the statues of Athens. Phidias and Alkamenes competed against one another for the execution of a masterpiece which was required to crown a stone column. The Athenians, at the exhibition of the statues upon the ground, awarded the palm to the Alkamenes statue; but when both works were placed in their proper position on high pedestals, Phidias' statue was considered the most worthy. Then this great master for all time had, with the greatest care, calculated on the position the statue would be required eventually to fill.

The lessons to be deduced from these facts, of service to practical photographers, are apparent. In the reproduction of statues and busts it is very necessary to ascertain for which point of view they have been executed—whether for horizontal, or upward inspection, so that the camera may be directed at them in a suitable manner. With statuettes the matter is different, as one is always compelled to approach nearer to obtain a picture of fair proportions. The following rule may serve as a general guide:—Busts, sitting and standing statues, and statuettes, should be taken at a distance about double that of their height, the apparatus being placed so that the lens is as high as the lowest part of the statue or bust, and then inclined upwards. Of course, for different objects, lenses of different descriptions must be used. Any imperfections in the sharpness of details may be overcome by judicious manipulation of the back of the camera. Figures reposing (Cleopatra, Queen Louisa, &c.) require generally to be photographed from an elevated position.

In portrait photography it must be remembered that standing figures are seen by us in a horizontal manner, and that only upon sitting figures are we apt to look down; the defect in the latter case, that the head, when upright, appears in the camera bent and looking downwards (as in No. 3), may be remedied by throwing the head of the model a little back, as, indeed, is often done in practice. To see men from below is not customary, and therefore unnatural.

The Effect of the Aperture of the Lens.—The extraordinary relief observed in the head of a model upon the ground glass of a camera is very striking, especially in the instance of a white plaster figure; the nose stands out in a very marked degree, and the whole image appears real and tangible. In lenses of small aperture this is not the case. An explanation of this phenomenon has not yet been given, but so much has been observed, and also confirmed by Dallmeyer, that landscapes taken with wide angle lenses (portrait lenses) exhibit more relief than similar pictures taken with an ordinary landscape lens.

This extraordinary modelling—which, by the way, diminishes with the decrease of aperture—is usually ascribed to the better illumination of the picture, and with reason. At the commencement of my labours on the subject of perspective, I at once came to the conclusion that the aperture of the lens played a very important role in the matter. A carte-de-visite lens, for example, has a diameter of two and a half inches, and the two diametrically opposite points of the front lens are, therefore, as far apart as the eyes in the human head. The right side of the lens would see something more of the right side of an object, and the left side of the lens more of the left side, and thus we have in a one camera picture different views of the same object combined together, which easily blend into one image. This holds good only with lenses of large aperture; in smaller ones the difference between the right and left sides is too trivial to produce any abnormal aspect of the object. It is, moreover, clear that the larger the aperture of a lens the more apparent (at the same distance) will this stereoscopic aspect appear; and the greater the distance at which the object is taken, the less relief is there—as, indeed, we know very well when taking stereoscopic views. Simple as this may seem, many will, no doubt, desire some practical proof of its veracity. Such proof is afforded by a very pretty experiment of my friend M. Hans Hartmann, undertaken in January last.

A plate of the best opal glass was placed in such a position that both sides were equally lighted, and the edge turned towards a lens of three-inch aperture. With one eye only the sharp edge of the plate was visible from the point at which the camera stood; but, upon examination of the image in the ground glass, a light shimmer was seen on either side of the edge produced from the visible but undefined glass sides. On covering up the left side of the lens the shimmer of light on the left disappeared, and the same occurred on covering up the other side.

Here, therefore, is practical proof of the fact that the left side of the lens sees something more of the object on the left, and the right portion something more of the right. If the edge itself is sharply focussed the sides appear, of course, merely as a shimmer of light, but if the focus is thrown farther back, the sides and the edge become fused into one broad mass.

This branch of the subject may, at first sight, appear unimportant to practical photographers, but it must be remembered that the modelling of a picture is very dependent on the aperture of a lens. The phenomenon is also the source of defects. In the human countenance there are portions which behave in photography like M. Hartmann's glass plate—as, for instance, the nose, which in full-face pictures is turned directly to the camera. If the aperture is larger than 2½ inches, and the portrait taken at close quarters, it is probable that the nose may be reproduced too broad; and if, in such an instance, the eyes, and not the nose, have been focussed, the latter will appear unshapely, from the fact of its edge not being sharply defined. This is the reason of the production of the so-called potato-noses which are taken with large lenses at short distances. By turning the face more round to one side or another such defects are avoided.

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ENAMEL PHOTOGRAPHS—BURNT-IN PHOTOGRAPHS.

BY PROF. J. TOWLER, M.D.*

Removal of the Collodion Film.

The next step is to remove the collodion, which is effected by immersing the enamel plate on the glass dipper in a dish of concentrated sulphuric acid. Without this precaution the collodion would peel off during the fusing operation, and carry with it some of the enamel powder. An immersion of ten minutes or a quarter of an hour will be sufficient time for this purpose. As soon as you perceive a reddish-brown fringe around the edges of the plate, slide the enamel plate gently out of the acid, and immediately afterwards into a dish of pure water. The utmost caution is necessary in performing this operation, as the powder at this stage is easily removed, and especially so in the washing operation, which is necessary to remove every trace of sulphuric acid. After washing, the plate is taken out of the water very carefully, and set aside to drain; it is finally dried, either by artificial heat or in the air.

Preparation of the Enamel Plates.

This is an interesting part of the process, and yet it is one which the photographer would gladly dispense with; it requires nicety in the operation, and entails considerable labour. Fortunately, however, enamelled plates are in the market of various sizes and shapes.

The plates themselves are made either of copper or gold; they resemble the silvered plates we formerly used in the Daguerreotype process, from the fact that there is a fillet or ledge about one-sixteenth of an inch raised all round the plate, thus converting the plate into a dish. For photographic purposes we shall limit ourselves to copper. Begin your first operations with small plates, and as you advance towards perfection enlarge your plates. Cut out a piece of sheet copper one inch and a half long by one inch wide, and remove all oxide from its surface, either by dilute nitric acid, or by mechanical means, such as grinding with emery or a flat piece of iron or stone; then raise the ledge all round as just mentioned. In the Daguerreotype process we had two or three instruments by which such ledges are easily and uniformly made, without in any way destroying the evenness and smoothness of the plate.

We will suppose you want to make a white enamel. All enamels consist of two parts, the silicious or basis, and the colouring material; they are also distinguished as transparent and opaque. The white enamel, which is what we want, is opaque, and is formed, perhaps, the most easily for beginners, by making a mixture of flint glass and calcine.

Calcine.

Calcine is the double oxide of tin and lead, or, as some denominate it, the stannate of lead. It is formed by fusing together at a low red heat an alloy of about twenty to fifty parts of tin with one hundred parts of lead in an iron ladle or dish; the oxide, as it forms on the surface of the melted alloy, has to be skimmed off to one side; and this operation is continued until the whole of the metal is oxidized. Take care not to raise the temperature too high; the lower the temperature the better, as long as oxidation is effected; the latter, too, must be as perfect as possible—that is, all metallic particles enclosed in the oxide must be picked out from the scum, and mixed with the melted alloy. As soon as sufficient of this oxide has been obtained, it is allowed to cool; it is then pulverized or ground up in a mill, and afterwards levigated with water on a marble or glass slab to a homogeneous or pasty mass; it is then elutriated or washed, in order to remove all metallic particles and the larger particles of oxide. The fine sediment is then collected and dried. This is the calcine.

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* Continued from p. 296.

White Enamel.

Calcine	1 drachm
Flint glass	2 drachms
Manganese	1 grain or more

Pulverize the glass to an impalpable powder in an agate mortar (by no means in an iron mortar); also the black oxide of manganese; finally, mix the ingredients together, and grind them together in a mortar; after which the mixture is fused in a crucible, taking care to exclude all smoke and other impurities from getting into the crucible. The melted mass is poured into clean water, and afterwards again pulverized, levigated, and fused.

Enamel Plates.

Take some of the enamel and pulverize it, and, whilst wet, place it with a spatula upon the prepared copper plate until the latter is uniformly covered. Absorb the moisture by blotting-paper, then dry the film of enamel powder, heat it gradually, and finally, placing the copper plate on a piece of fire-clay, introduce it into the furnace, and fuse the enamel. Watch the operation, and withdraw the fire-brick as soon as vitrification has taken place. Let the plate cool gradually, and, if necessary, repeat the operation with another layer of enamel; finally, grind the enamel surface with sand first, and then with emery, and then submit once more to fusion, so as to give the polished surface a vitreous gloss. Plates prepared in this way are for the reception of the chromic collodion film as soon as the latter has been exposed, and already contains the picture in some coloured enamel. This thin film is caused to adhere to the white enamel by means of a solution of sugar as already described.

Enamel Powder for the Chromic Collodion.

In the first place, a very fusible, transparent flux or glass is required to hold the coloured oxides.

Flux.

Silica	10 parts
Minium	40 ,,
Borax (calcined)	40 ,,

Pulverize these ingredients, mix them intimately, then fuse. Pour the fused mass into water, again pulverize, and fuse. This is a very fusible flux or basis for melting with the colouring materials.

Black Enamel.

Flux	2½ drachms
Oxide of copper	16 grains
Oxide of cobalt	24 ,,
Oxide of iridium	1 grain
Sienna (earth)...	8 grains.

These ingredients are thoroughly pulverized, intimately mixed, and fused. The operation is repeated; the black mass is taken from the water after fusion for the last time, and is pulverized in an agate mortar to the finest powder possible; by this means it is then levigated on a large glass slab into the finest paste, until it is as homogeneous as a layer of so much Indian or Chinese ink. Finally, it is washed and dried. This dry, impalpable black powder forms the developing powder (it must be perfectly dry and perfectly impalpable).

Vitrification of the Picture.

To fuse the prepared film is, perhaps, the shortest part of the whole process, and the easiest, and, in fine, the most successful, supposing, of course, that all the preparatory work is correct. An assayer's furnace—that is, a cupel furnace—is required for this operation. Such furnaces can be obtained of Wilson, Hood, and Co., Philadelphia; of Bullock and Crenshaw, Philadelphia; of J. F. Lahure and Co., New York; and elsewhere.

The fire is lighted with charcoal, and then heaped up with mixed charcoal and coke of the size of horse chestnuts, until the fuel is three or four inches above the muffle. By this means the muffle becomes red-hot. The prepared plates, previously well dried, are placed on pieces of baked fire-clay in the front of the muffle, in order to be heated gradually; finally, they are pushed back to the hottest part, where the picture in a few minutes fuses. During this part of the process the mouth of the muffle is closed with two or three pieces of charcoal, leaving space enough between to watch the operation. As soon as vitrification has taken place, the piece of fire-clay with the plate upon it is drawn again to the front, so as to cool gradually; and, when sufficiently cool, it is placed upon the plate of an iron stove to cool still more, and finally it is set aside to cool completely.

These enamel pictures are the richest specimens of photography when properly managed.

In this article I merely give a sketch of the whole proceeding, in order to draw the attention of photographers to this interesting branch; and to those who feel desirous of making this branch a special study I would recommend the perusal of a small pamphlet on the subject by Lucy Fossarieu, Paris, as also of the excellent work of Geymet and Alker, entitled "Emaux Photographiques," both of which are practical treatises. Geymet and Alker supply all the materials, enamels, furnaces, muffles, a peculiar sort of photographic paper for preparing the positives, and, in fine, give instruction in this art, and guarantee success. We know personally that this branch is successful.

ENLARGING OF PHOTOGRAPHS WITH THE ORDINARY CAMERA.*

It is almost a general belief that a so-called solar camera is an indispensable piece of apparatus for the production of photographic enlargements. This is far from being a fact; that is, the solar camera in all its forms, whether of that of Woodward, of Shive, of Roettger, &c., in many instances may be entirely ignored, if by the denomination solar camera we comprehend a condensing lens or a condensing reflector as constituting its essential character. It will be well to know, in the first place, what the peculiar characteristics of the condensing lens and of the condensing reflectors are. They are different in each case.

The property of the condensing lens is to produce a cone of light, so that the rays of light impinge upon the negative, converging, and proceed in this converging condition to the lens, whose property it is to produce the picture. On arriving at this lens the rays are rendered more convergent, and are brought to a focus in the optic centre of the last combination of this lens. By reason of this increased convergence of the rays, on leaving the focal point the rays pass out of the lens more divergent than they entered, and thus produce a larger illuminated circle of light; that is, they increase the angle of view. Do not misunderstand me, by this expression, that any given object is enlarged by means of the condenser. Such is not the case. But more of the object can be seen by means of the condenser than when it is not employed. For instance, at a given distance behind the lens we will suppose that on the screen a picture is accurately focussed by means of a given lens, and that the diameter of the illuminated disc is ten inches and one-half; also, that the longitudinal diameter of the head of a portrait in the disc is five inches. This picture is produced, of course, as it always is, by means of the lens placed beneath the negative and the screen at the proper focal distance. We will now introduce the condenser into its place, and see what its effects are. Now the illuminated disc is twenty-four inches in diameter, and a larger portion of the portrait, comprehending the hands and lower ex-

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Philadelphia Photographer

tremities, is visible; but the longitudinal diameter of the head remains exactly the same, and in exactly the same position.

Furthermore, the amount of illumination on a given square inch is not materially different in the two cases; that is, for practical purposes not materially different. The sharpness of the picture has been neither increased nor diminished by the employment of the condenser. In fine, the only apparent change produced by its employment is simply to enlarge the field of view or the illuminated disc. This, I admit, is a great advantage where it is needed. It was supposed, and probably is even now supposed, that the condenser carried, as it were, the picture of the negative in the convergent cone to the distributing lens; and from the fact that that part of the cone on its arrival at this lens is reduced to a very small compass, it has been argued that central stops are unnecessary, because the picture being already alone on the axis of the lens, and nowhere else, it is not necessary to exclude the peripheral parts by means of a diaphragm. Now, if the picture were located in the convergent cone, and nowhere else, and were produced by this cone, it is evident that if the convergency were altered, or the distance of the condenser from the lens were either increased or diminished, we might expect some change in the picture on the screen; but the only apparent change is simply in the size of the illuminated disc. This fact shows that the picture is independent of the condensing lens.

The condensing reflector consists of an inverted frustrum of a pyramid of four sides, so arranged as to condense by single and double reflection a much larger amount of light upon the negative than that which is obtained by the direct impact of a bundle of parallel rays from the sun; this extra amount of light increases the illumination of the negative to a great extent, and partially increases the angle of view on the screen, but not so decidedly as the condensing lens.

It appears, therefore, that the production of a solar picture is essentially independent of all so-called condensers. This being the case, then, the questions arise: 1st. Can we obtain an enlarged view by means of a common copying camera without a condenser, as correctly, efficiently, and rapidly as with the so-called solar camera? And 2ndly, Can we increase the size of the illuminated disc without the intervention of a condenser?

Let us test the first question. Fix up a copying camera in such a manner as to be furnished with a vertical and horizontal motion, thus allowing the camera to be tilted so as to receive the direct rays of the sun perpendicularly upon the negative, and to be moved as the sun moves. Focus the picture upon the screen in the usual way, and then introduce the sensitized paper. You will find by experience that the printing operation will be accomplished almost as rapidly as with the ordinary solar camera. This method is, indeed, quite satisfactory; and where the prints are subsequently to be finished by development, either upon bromo-iodized or chlorized paper, the difference of rapidity between the two instruments is imperceptible.

In answer to the second question, we may observe that there are methods of increasing the size of the illuminated disc without the intervention of condensing lenses. Thus, for instance, take three different lenses, the principal focal distance of each being three inches, as one of Harrison's portrait combination, one of Harrison and Schnitzer's Globe lenses, 'and finally, one of Ross's stereographic doublets. Each one of these magnifies to the same extent—produces a picture of a head on the screen of exactly the same size; but the equally illuminated disc in each case is very different. Thus, with the portrait combination it is the smallest, and with the stereographic doublet it is the largest. Thus, then, for all solar operations, the stereographic doublet lens presents itself as incomparably superior to the other two forms, and probably the best of any existing form.

Therefore take the best lens to begin with.

Secondly, the magnifying power of the stationary lens may be considerably increased by placing in front of it, and nearly in contact with it, the objective of another lens. Thus, for instance, I placed in front of my copying lens the four-fourth objective of a Jamin's view-tube; and I thus increased the illuminated disc from a diameter of ten inches and one-half to fourteen inches, and at the same time the picture of the object was magnified. The only means, therefore, of increasing the illuminated disc, without at the same time changing the magnifying power, depends upon the peculiarity of construction of the lens and upon the employment of a condenser.

Naturally, the illuminated disc can be obtained of any size whatever by simply removing the screen more remote from the lens, a plan which I excluded from contemplation by fixing the screen at a given distance.

Now photographers will do well to study the whole use of their lenses, and they will then learn that exquisite enlargements can, by the method just recommended, be made with a small bath on a quarter-plate, so as to cover an eight by ten plate very correctly.

A copying camera mounted as directed is excellent, too, for copying Daguerreotypes, tintypes, ambrotypes, engravings, &c.; indeed, much superior to a camera that is stationary (of course, I refer to the system of copying by the direct rays of the sun, which I regard by far the best.) But why superior?

Take, for instance, a Daguerreotype, and place it in the focus of the lens, and turn on the light of the sun. This is done by wheeling round the camera so that the sun's light can shine upon the picture. Now observe the image on the screen, and meanwhile tilt and move the camera in different directions, still keeping the sun's rays upon the picture. You will observe that in some positions the image on the screen is hazy and indistinct, in others it is less so, and finally in one particular position the image is most distinct. This one particular position is easily found by means of the camera in question.

Correspondence.

"UNTOUCHED BY THE GRAVER."

Dear Sir,—I would wish to call attention to a paragraph in Mr. Dallas's communication tō the last week's number of your journal, which, I think, is calculated to mislead those who are unacquainted practically with the capabilities of engravers' tools.

Mr. Dallas says that "*untouched by the graver*" means that "no tool has been employed to put detail and colour into the plate." An engraver would not so understand it. Deprive a skilled artist of his graver, and he would still have ample means of producing any amount of both detail and colour.

A few lines further on Mr. Dallas again says, "The scraper can put in no detail or colour." In pure mezzo-tinto plates the most elaborate detail (white lace scarf and collar on a lady's portrait, for instance) would all be put in by the scraper, and finished in the highest lights by the burnisher; and a plate which may have occupied months to engrave, would, probably, be finished without a day or an hour's "graver work."

Not having had an opportunity of examining any photo-galvanographic plates, I do not know the character of the printing surface, but imagine it to be somewhat similar to a mezzotinto ground, a matt surface which would print a black mass; if my supposition be correct, the scraper is the very tool an engraver would select to put in the lighter forms, and (especially on copper) by using it as a "dry point" he could put in any quantity of small dark detail.

Apologizing for so far intruding on your space, and most emphatically asserting that I have not the slightest idea of imputing "equivocation" or any intentional misleading to Mr. Dallas, who is an entire stranger to me, I remain, faithfully yours, W. T. Hulland.

Tamworth, June 27th, 1870.

COST OF PATENTED APPARATUS.

Sir,—When men find a difficulty in "keeping the pot a boiling" they are apt to consider the profits of those who supply hem with what they require as exorbitant, extortionate, and even something worse. It is possible that this sort of feeling may or may not account for my present grumbling. I am not going to complain of the value of the articles themselves, but, with your permission, direct attention to the profits that two recent photographic inventors propose to pocket.

You, Mr. Editor, ever on the watch to supply your readers with novelties, have lately introduced to their notice two ingenious devices. I allude to Mr. Hart's "Amateur's Pavilion or Portable Studio," and Mr. B. J. Edwards' "Combination Printing Frames." I have seen them myself, and endorse all you have said in their favour.

Mr. Hart's Pavilion is an ingeniously constructed frame-work of iron gas-tubing (costing about 2½d. per foot) covered with calico; size about 15 ft. by 10 ft. For this I am asked to pay about £10. I cannot, in this case, see what it is Mr. Hart does patent. Is it the gas-piping or the calico?

Mr. Edwards makes a still more outrageous attack upon my purse. Not only does he ask £2 8s. for a set of Frames, cabinet size, but he also demands two guineas for himself for license to use them, and, if I employ men or send out my printing, they must all have licenses too.

These high rates have had one effect on me, and probably have affected many of my poor-in-purse brethren in the same manner: *they have set my wits to work so that I can do without them.*—I am, sir, yours respectfully, INGENIO.

June 27th, 1870.

[We admit this letter as an apparently honest—certainly outspoken—expression of opinion on a subject of general interest to photographers. It will be for the patentees concerned to answer if they see necessary. But, in the meantime, we may point out that our correspondent has entirely overlooked the fact that in the manufacture of any patented article there are several sources of outlay for which the inventor must be reimbursed. There are the time, material, and money spent in experiment before the invention takes form; and there are the expenses of the Patent Office, besides those of manufacture, agency, &c. In the case of Mr. Hart's Pavilion, we happen to have been present when an accurate estimate of the cost of the various materials and of the manufacture was made, which showed that the charge is not exorbitant. The cost of Mr. Edwards' Frames we do not know, but our correspondent is in error in supposing that a license will be required by his work-people.—ED.]

RIDGE ROOF *V.* SLOPING FRONT STUDIOS.

DEAR SIR,—I send, per book post, sixteen cartes to show how nearly the same results may be obtained out of two very differently formed studios.

Nos. 1 to 8 were taken in a sloping front studio, and from 9 to 16 in my present ridge roof studio. There was very little difference in the exposure: Nos. 1 and 2 got about five seconds, and No. 10 two seconds. All were developed with plain protosulphate of iron, 10 grains to ounce of water, and 20 minims acetic acid, slightly strengthened with the same developer, with a little citric acid and a little silver added, as recommended by Mr. Blanchard.

I must say, however, that if the exposure was nearly the same, the trouble was not. There was six times as much trouble in the sloping front studio as in the ridge roof. I had to use blinds and screens, and cords, and pulleys until my studio looked like a sailing vessel. In my present studio I had only my side shutters and two blinds on the top. I never use a reflecting screen of any kind, and none of the negatives were touched. I believe that both reflected light, unless very carefully used, and working-up the negatives, destroys the expression very often. I may say something on expression at a future time.—Yours truly, D. WELCH.

Newry, Ireland, June 25th, 1870.

[The examples—amongst which are some very charming pictures—sent by our correspondent admirably illustrate the position stated.—ED.]

THE PRETSCH CONTROVERSY.

DEAR SIR,—Much against my wish I am obliged to intrude again upon your columns. I thank you for your courtesy in giving so much space to my communications. I did not expect that you would have published in one number the whole of my last letter, but that you would have divided it into two. By omitting altogether the extracts from the judgment of the present Lord Chancellor Hatherley—an impartial authority—and my sworn affidavit, you unwittingly do an injustice. You are not the man I have always thought you if you do not repair it by publishing the excised part of my letter. I ask this as a matter of fair play; as, besides being a complete answer—chapter and verse—to Pretsch's allegation published by you (viz., that I retired from the company for a consideration) it also shows that Pretsch was backed by the whole company, while I was isolated. It is also only fair that you should publish it, as you suggested that possibly I was "mistaken," and you did this in a manner to throw doubt on my credibility. Besides, you have inserted a letter from Mr. Spiller with a sting in its tail to the effect that as I was connected with the company I must be held responsible for issuing a specimen with "absolutely untouched" inscribed upon it. Let me remark, in passing, that the phrase "absolutely untouched" was never engraved upon any plate with my sanction. The phrase was the peculiar property of Herr Paul Pretsch. I always objected to any deception being practised in the matter, and never disguised the fact that the engraver was necessary.

To return to the omission from my letter. If your object is truth and justice without fear or favour, you are bound not to suppress such material and satisfactory evidence as is afforded by Lord Hatherley's judgment, delivered after a patient hearing of all that the plaintiffs could allege against me. The matter is connected with the history of photo-engraving, and explains one of the causes which has operated powerfully to retard the advance of the art in this country. Please, therefore, insert what now follows.

I never received any consideration from my partners, as asserted by Pretsch, to leave the company. I refused to retire, although offered terms to do so. Those terms were simply ridiculous, and the most underhanded means were employed to force me into acquiescence. I proposed alternative terms: either £250 down, and a free licence to work the process, or £500 cash without licence. These terms were not accepted, and, to force me at length into theirs, they filed a Bill in Chancery, in which George Walker, Paul Pretsch, James Carlton, Charles Watson, John Robinson, John Swainson the younger, and Roger Fenton were plaintiffs, while I was defendant. Seven to one, I fought them single-handed, although they had, practically, unlimited means at their back. The present Lord Cairns (then Mr. Cairns) and Mr. Pearson were my counsel, and the cause, which occupied a whole day, was heard and decided by the present Lord Chancellor Hatherley, then Vice-Chancellor Page Wood. "The engineers were hoist by their own petard." Judgment was given against me on the main point of their Bill, viz., that the partnership was one at the will of the majority, and not requiring six months' notice of dissolution, as, without my instigation, had been inserted in the deed of partnership. The plaintiffs had accepted the deed and acted upon it; but as there was this variance between it and the instructions to counsel, they declared at the eleventh hour, when it suited their purpose, that they would not be bound by it. The judge, however, decided, much to their surprise and chagrin, that they were bound by it in every particular, save the notice of dissolution. The judge further marked his disapproval of the conduct of the plaintiffs towards me by refusing them costs. He expressed himself in these words:—"Now as to the other part of his [Dallas's] evidence, the question being whether he should not have at once submitted to a decree, I should hesitate but for this, that it was said the course taken at the latter period by the plaintiffs was not only uncandid, but misleading as regarded this gentleman. And I have come to the conclusion that the defendant was not very well treated; and, further, they misled him. They held a number of private meetings, at which this gentleman was not present, and held them among themselves, and of which he had no notice, and nobody ventures to say he had, and in which they came to resolutions among themselves as to the formation of the company." [The plaintiffs were contemplating an incorporated company.] "And at a meeting, as shewn by the books, they were determined 'to get rid of the fellow;' and I think it will be admitted that cannot be a meeting at which he was present. And then the result of all these meetings is, that they go to him and enter into some sort of treaty with him for retiring, and deal with him as being a person in a condition to be treated with." [According to the view the plaintiffs at last sought to establish, if the partnership was at the will of the majority, the judge was correct in saying I was not ı a position to be treated with, but should have at once ecepted the immediate notice of dissolution, and have allowed ıe partnership to be wound up.] "One paragraph I was ıther struck with, the 36th paragraph of the defendant's idavit. He said he was asked whether he would retire from o company 'if I was released from liability and my policy turned, and whether I would sign an agreement nullifying e said deed of partnership, which required six months' tice of dissolution.' It is rather ambiguously worded. It s not say, Will you get rid of the six months' notice? but ly to get rid of the deed which required six months' notice. ıs left in obscurity." [There was really no obscurity. If e plaintiffs got rid of the deed—their main object—they got l also of the six months' notice of dissolution. The paragraph as as follows:—'On the 5th of January, in the present year 57) the said James Carlton invited me by letter to meet m and the said Roger Fenton at Holloway. I had not been ere for some time, having, without any assigned cause, been nied access to the books of the partnership. I went to Hollo-ıy as requested. My first inquiry was whether the deed had en signed. The said James Carlton said it had not, and ain attributed the blame to Mr. Walker's negligence. I was en asked whether I would retire from the company if I was eased from liability and my policy returned, and whether I uld sign an agreement nullifying the said deed of partner-ip, which required six months' notice of dissolution. Nothing s said about the clause of dissolution in the deed being at ıriance with the heads of articles. The said James Carlton d Roger Fenton wished me then and there to sign a paper reeing to the terms proposed. To this I declined to accede.'] Mr. Carlton," the judge continued, "does not deny the cou-rsation which took place. Nor is there any doubt there have en various endeavours to negociate with this gentleman; ıd somewhat by surprise at last he is served with notice of is immediate dissolution; and that apparently rather more r some particular object—they have a right to do so if they ıink fit—than for any particular reason this gentleman has ven them for being dismissed from the partnership. I have en dissatisfied with that course of proceeding; but I think is a case in which there are sufficient grounds for decreeing dissolution from the 18th of February, 1857, but without costs."

The judge then made the following order, to which he adhered spite of the efforts of the plaintiffs' counsel to take the matter ıt of the court:—

"The Vice-Chancellor to the Registrar:—The partnership to wound up. Dissolved as from the 18th of February, 1857. ırect the partnership accounts to be taken. The partnership operty sold under the disposal of the Judge at Chambers."

This put the plaintiffs in a "fix." Their costs, I believe, ıounted to nearly £1,000. Mine were £250. The chief ect I had in defending the action was gained: the vindica-n of my honourable dealing. "The game was now no longer ırth the candle." An end was put to further litigation by a mpromise entered into by my solicitor with Messrs. Fry and xley on behalf of the plantiffs. They agreed to pay £150 of y costs and to return my Policy of Insurance. After this ırlton, Fenton, and Pretsch reformed the company, but it did t live very long.

I am sorry to trespass further on your space, but Mr. Spiller's ter is so much at variance with facts that I must reply. Mr. ıller has either a very short or a very imaginative memory. may have *intended to* have asked me to contribute to the urnal of the Society, but it is certain that he did not. I as rtainly never told Mr. Spiller at the meeting in question that had expressed any wish to address the meeting. If any one uded to Mr. Spiller a slip with "Call upon Mr. Dallas to eak," it was done not only without my sanction, but *without y knowledge*; nor do I at this moment know who wrote or nded in the slip. Mr. Spiller, after I came to the table, did y: "We thought of calling upon you;" and I replied, "I am ry glad you did not." Not a word was said to me about my tended remarks appearing in the Journal. I had then no sire to speak on the subject, although, I must confess, "while was musing the fire burned." I thought of sending a contri-ıtion to the News and the British Journal. On my way ıt I met Mr. Taylor, and asked him if he would like to have e true facts relative to Pretsch's claims. He said he would happy to receive my contribution. After my return home, wever, I changed my mind, and thought, as I had "other fish fry," I would not revive a hateful subject. The following ote from Mr. Spiller changed my determination:—

"35, Grosvenor Road, Highbury New Park, March 9th, 1870.

"My Dear Mr. Dallas,—Could you kindly favour me with a short letter to appear in the Journal, embodying the statement which, for want of time, we were prevented from calling upon you to make at the meeting last night. I will see that it is properly inserted. Please send at your earliest convenience, as I should like it to appear in the next number. Could you let me have it by Friday's post?—Yours very truly, (Signed) John Spiller, Hon. Sec."

On that hint I wrote, and it was the first time in my life I was ever invited to contribute to the Journal of the Photographic Society. I cannot say I received much encouragement to contribute again. My facts were unpalatable, and therefore were dismissed in the briefest of foot-notes. My letter being thus practically "burked," I sent it to the two weekly journals.

In the course of this controversy I have "hit out straight from the shoulder." If any others besides Pretsch has been hit I am sorry for them. They should not have got in the way, but should have remembered the old rhyme—

"Who doth in quarrels interpose,
Will often wipe a bloody nose!"

I have never, in all these years, pushed myself forward. I have been, and still am, content that my *work*, done with my own hands, should be my passport to appreciation. I have devoted no small portion of my life to photo-engraving, and am still working at my hobby. I have never been satisfied with rule-of-thumb or hap-hazard work. I have endeavoured to get at the back and the bottom of things. I have studied well, and without help from any quarter, the principles and phenomena involved in my two processes of "Photelectric-engraving" and "Dallastype." I have mastered all the practical details of these two processes; and I believe the day is not distant when these two processes will be used extensively. I am now working up a business based upon them. Photelectric-engraving has shared the fate of plate-work in this country; there has not been sufficient commercial demand. But there are signs that plate-printing is reviving.

To conclude the matter, let me say I have no unreasoning antipathy or jealousy in respect of work done by foreigners. I am cosmopolitan in this matter. I admire such beautiful work as that of Albert in your last week's issue, but do not think it fair that incompetence and pretence in a foreigner should find ready backers among Englishmen. In photogalvanography the work was done by me,

"——sed alter tulithonores,"

kleptographically.—I am, yours truly,

London, June 27th, 1870. Duncan C. Dallas

[We must crave the indulgence of those readers—and we fear there are many—who have little interest in the discussion which the above letter concludes, for the amount of space it has occupied on personal questions; but we should feel unwilling to leave anyone personally concerned in the question with a sense of injustice in the matter.—Ed.]

Talk in the Studio.

American National Photographic Association.—We are indebted to our esteemed contributor, Mr. E. L. Wilson, for a batch of newspapers containing full accounts of the successful meeting of the National Photographic Association in Cleveland, Ohio; and also to Mr. E. Anthony for newspaper cuttings and a proof of full report of the addresses of Dr. Vogel to the Association. The meeting, and the Photographic Exhibition held in connection therewith, have evidently been very successful. We shall have more to say on the subject in our next.

Photography and Crime.—Photography has again been playing an important part in assisting identification of criminals. A photograph having been taken of the alleged Denham murderer, one of the prints was taken by the police to the house of John Owen, a tailor, of Byfield, near Daventry, and it was immediately recognised by two daughters of Owen, who were on a visit to their father from Birmingham. An exceedingly painful scene is stated to have taken place; the sisters, on seeing the photograph, immediately exclaimed, "Oh, it's our Jack; there is no doubt about it now," and burst into tears. The picture was then shown to the father, who was also greatly overcome. He said that he hoped the police would not show the photograph to any one else, and the old man afterwards endeavoured to make his daughters believe that they had been mistaken, but to no purpose, the girls being convinced as to the identity of the likeness. A great number of respectable persons living in Byfield and in the neighbourhood likewise at once identified the portrait as being unmistakably that of "Jack Owen."

Pure Rain Water.—A correspondent of our *Philadelphia* contemporary says:—"In May or the beginning of June last I caught a bottle of water after a storm of some fifteen hours hard rain. Found it very clean by use. The part not used I set on a shelf in my dark room, within four feet of the tin roof, in a glass-stoppered bottle. It must have been as late as September or October I had use for clean water, but rejected that without an examination, supposing it to be rotten. In a few days there came a hard storm, and I took down this bottle to throw out the water and catch more. To my surprise it was sweet, both to the smell and taste. I then threw into it a crystal of silver, and set it in the sun, and the only precipitation produced was a very, very slight colour. I used it, and it made a valuable and lasting negative bath. I mentioned this matter to a German druggist the other day, and learned from him this fact: that in one of his old medical books brought from Germany was this statement: 'That water caught in a clean vessel, in a storm between the 15th of April and the 15th of May, was almost absolutely free from organic matter.'"

Pinholes.—Mr. E. A. Kusel, in the *Philadelphia Photographer*, says:—"A great deal has been written and said about pinholes. Maintaining that a bath exposed to light during use will give pinholes, I have about come to the conclusion that it is oftener the fault of the collodion than the bath, and light has nothing to do with it. A few days ago I made some new collodion. I coated a plate dipped in my bath, which is a glass covered one, and, lo! the plate was full of pinholes. I tried another bath with the same result. I tried my old collodion, and all was right. I was in a dilemma. It was surely not the bath that caused it. I dipped another plate with the new collodion. I found the film very creamy. I reduced it with plain collodion: result, less pinholes. I reduced it more, which gave me a thin blue film, but no pinholes. It worked very quick, and developed a soft negative. In this case I am certain it was not the light acting on the bath, nor the bath itself, but the collodion. I think all have philosophized on the production of pinholes, but no one has ever taught us how to prevent them. I have had them often, but always got rid of them without throwing away my bath. I used to bother with the bath, but I came to the conclusion that pinholes may be got rid of by doctoring the collodion and harmonizing it with the bath, in place of the bath with the collodion."

To Correspondents.

Tent Maker.—Much depends on the quality and texture of the calico as to the number of thicknesses necessary to cover a dark tent. We have one or two tents in which two thicknesses of black calico and one of yellow for the interior are employed, and answer well. For the window a patch, eight or nine inches square, of yellow calico only answer well. A very thin light Mackintosh cloth, white outside and black inside, answers well for tent covering; but, as it is impervious to air, the tent becomes very hot unless some means of ventilation are provided.

R. Isherwood.—The effect is produced by using an oval mask of black paper between the negative and the sensitive paper. Such masks are sold by Mander, of Birmingham, and other manufacturers of photographic materials.

Just Out.—You are scarcely specific enough as to the size of landscapes, buildings, &c., you wish to take. The rapid rectilinear of the maker you name will answer both purposes well, if selected of suitable focus for the sizes you desire to work. For cabinets his 3B answers well, and for cards either the No. 1 or No. 2 of the same series, depending on your length of room. The manufacturer will advise you which, if you state the length of your studio.

J. C. M. Stone.—If you use your sensitive paper freshly prepared, keep it carefully excluded from light during all the operations, and use a freshly mixed fixing bath of four ounces to a pint of water, you will have no difficulty in getting pure whites, provided your negatives are moderately good and vigorous. In hot weather it is often desirable to sensitize and print the same day, in order to get the margins of vignettes scrupulously white, and it is very important not to use old or weak fixing solution. It is well also to wash between toning and fixing.

W. E. M.—You will find some particulars of the process of photc graphic printing on wood by means of gelatino-chloride of silve as patented by Mr. Smith, on page 601 of our Ninth Volum The date of the number is December 22nd, 1865.

Nemo.—The process of Grune for dissolving the collodion fro transferred pictures is now public property. It was provisionall specified, but the patent was not completed. This specific tion contained no details, and we therefore obtained particula from Mr. Grune himself.

Beta.—A studio with a clear south light will necessarily invol much trouble in sunny weather. In dull weather it will gi good results, but whenever the sun shines it will be necessary work with thin blinds to diffuse the direct sunlight. These blin may consist of thin glazed muslin, or of tracing-cloth, or of fram covered with tissue paper. If you have a large north sky-lig you may possibly get sufficient north light in sunny weath although the north side light may be obstructed.

Glory.—A deal tray well varnished with shellac varnish—that shellac dissolved in wood naphtha or in methylated spirit—w answer well for a hypo dish. A little boiled linseed oil added the varnish will make it tougher and less apt to chip. 2. A d tray with glass bottom, even if well varnished, would not answ so well for a gold toning bath, as the gold solution is easily deco posed, and gold precipitated. Line the deal tray with gla sides as well as bottom, using marine glue as a cement. T will answer. 3. The varnished deal tray will answer for washi better than zinc.

G. H.—A solution of india-rubber in benzole, or turpentine, bisulphide of carbon, will answer. 2. In photographing lar scapes with dark foliage and water, or other subjects presenti violent contrasts, the great harmonizer is a bromide. For su subjects use a freely bromized collodion—say two grains to ounce—and also a strong iron developer. 3. The D will g greater depth of focus than the A; but it will also work somew less rapidly.

Phillip Holland.—The letter has been forwarded.

J. Carbutt.—Thanks. The pictures are very good indeed. are glad to hear of the progress in America of such an import method of printing.

D. Welch.—Thanks. The pictures are excellent.

The Pretsch Controversy.—The insertion of a long letter fr the "Old Photographer" is left to our discretion. We do think it of sufficient importance to discuss, further than we help, merely personal questions, the interest of which is entirel the past. The "Old Photographer" wishes, however, that should point out that Mr. Dallas confines his remarks to Prets vague specification and early labours, notwithstanding that he experimenting many years in England, and that the "secr before referred to was claimed by Pretsch in his latter years, was not incompatible with having taken a patent years bef Several other points are discussed in our correspondent's letter, they are not important, as no practical information of a spe kind comes out of the discussion.

F. M. D.—The practical object of adding alcohol to the prin bath is to prevent the albumen being dissolved from the surfac the paper. This is effected rather by reducing the solvent pow the bath, by substituting a certain portion of alcohol for an e quantity of water, than by any coagulating action of the alc under such circumstances. The use of the alcohol prevents bath discolouring rapidly. The addition of sugar to the prin bath is found to preserve the colour of the whites when the p is kept a few days.

L. N. R.—Thanks. We are obliged by your complime remarks. We understand that the defunct journal to which refer has been a heavy loss from the first, having never att any circulation worth mentioning.

Adam Distin.—The combination picture, "A Peep-show," by method of Mr. Johnson, of Wick, is very excellent inde point of skilful manipulation, and, better still, it is very indeed as a picture: the expression and general story of the ture are very admirable rendered. The "School-boy" is a very capital bit of photographic portraiture. The flesh text unusually good.

W. T. R.—There are two or three reasons for the discolourati your developed enlargement. The silver bath is too strong you require more acid conditions. Use a weaker silver bath forty grains to the ounce—and add about twenty minims of acid to each ounce of developer. A single drop of a ten- solution of bromide added to the developer will materially preventing discolouration; a little of the salt in the paper, le converted into a silver salt, will materially aid cleanliness careful to exclude light as rigidly as for collodion plates; above all, do not allow the developer to touch the back o print, as in the example sent. If the print gets wet at the stains will certainly follow.

E. Anthony.—Many thanks.

A. de Constant.—Received. Thanks.

Received: "A New Star Atlas," by R. A. Proctor, B.A., F.F

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
Annual Convention of the American National Photographic Association ... 313
Washed and Fumed Sensitive Paper ... 314
Fine Art Exhibition at Cardiff ... 314
Echoes of the Month. By an Old Photographer ... 314
The Paris Photographic Exhibition ... 315
Photographic Rambles in South Wales. By Thomas Gulliver ... 316
American Correspondence ... 317
Collodio-Chloride Paper: Its Preparation and Employment By Professor Krippendorf, of Aarau ... 318

PAGE
Remarks on Silver Dippers. By John M. Blake ... 320
Magnesium and Electric Lights as Applied to Photo-Micrography. By Brevet Lieutenant-Colonel J. J. Woodward ... 320
Correspondence.—The Amateur's Photographic Pavilion—Pretsch and Photo-Galvanography—Stains on Prints ... 322
Proceedings of Societies.—Liverpool Amateur Photographic Association—Oldham Photographic Society ... 323
Talk in the Studio ... 323
To Correspondents ... 324
Photographs Registered ... 324

ANNUAL CONVENTION OF THE AMERICAN NATIONAL PHOTOGRAPHIC ASSOCIATION.

The question whether a compact association, acting cordially together to secure a common interest, could be formed out of the disunited, if not antagonistic, elements forming the mass of professional photographers in any country, has been effectually answered in America.

The National Photographic Association is clearly a success. Organized in Philadelphia at the latter end of 1868, it has steadily progressed in numbers and influence, and we find its second annual meeting, held in Cleveland, Ohio, not only numerously attended, and a source of pleasure and advantage to the members, but an event of public interest, duly chronicled in successive numbers of the various daily papers, which have devoted many columns to the subject.

The meetings were held in a large skating rink fitted up and decorated for the occasion, and several hundreds of photographers from all parts of the Union attended. The large and very fine photographic exhibition held in connection with the Convention, at which contributions from all parts of America and Europe were exhibited, appears to have been a very successful feature of the occasion. Bands of music were in attendance. The evening exhibitions of photographs by means of the magic lantern, by Mr. Black, of Boston, appear to have been on an unusually grand scale. Capital lectures and addresses were delivered by the president, Mr. A. Bogardus, a veteran New York photographer, and by our friend and collaborateur, Dr. Vogel, who, by his bright enthusiastic spirit, was well fitted for the position of the lion of the occasion. In the discussions the utmost courtesy and harmony prevailed; a common interest seems to have been recognized by common consent, everybody doing what he could to promote the interest of the occasion. Mr. Carbutt, from Chicago, was working the Woodbury photo-relief printing process before the members, keeping two presses going, and astonishing everyone at the simplicity of the means and excellence of the results. Mr. Carbutt has furnished us with a couple of capital prints, printed at the time, as mementoes of the occasion.

Nor were the proceedings wanting in elements of the most essentially practical character. To promote the common interests of photographers, funds are required, and funds were forthcoming. Heavy expenses had been undertaken in defeating various unjust patent imposts, and the funds for defraying these expenses were collected. It was resolved that a relief fund for sick and destitute photographers should be established, and a thousand dollars were collected towards such a fund. A manufacturing firm offered a gold medal of the value of one hundred dollars, and a silver medal value twenty-five dollars, for the best and second best improvement in the art of photography, made during the coming year.

The questions which naturally arise, in contemplating this successful experiment beyond the Atlantic, are: Is it desirable, and is it possible, that any similar organization should be established in this country? In some respects less necessity exists here than elsewhere for such an association. England has been essentially the home of photographic societies, and photographic journalism has been here more active than in any other part of the world. By these agencies the intercourse amongst photographers has been made tolerably familiar and frequent, and the various questions interesting photographers have thus been easily discussed. But there are purposes to be secured by the American Association which no organization existing here can readily compass. In America the Association will take cognizance of trade questions, and social questions which affect the interest of the photographer—in fact, of everything which can in any way affect the welfare of the art or individual. Our societies, as constituted in this country, are necessarily confined to matters concerning the art, and are even crippled, in some respects, by lack of means in efforts for its promotion. The National Association can take steps for establishing a relief fund, a course clearly beyond the province of the Photographic Society of London; and, notwithstanding a vigorous attempt made in our pages to secure some such fund, from the absence of any fit organization it fell through. The American Association can defend the community from unjust imposts. Luckily, in this country, there are none, or none of any consideration, to combat. It can discuss the question of prices as affecting the interests of photographers, and give its weight to the pithy advice of its president: "Let us try to *excel*, not to *under*-sell;" and it can consider the interests of the photographer in a variety of ways not compatible with the character of our photographic societies. The offer of medals for improvements in the art is an act equally open to either Association or Society. The Photographic Society of London, some years ago, resolved to issue a medal for a similar purpose, one being awarded in advance, but funds have never been forthcoming for the production of the president's medal. The enthusiasm of one meeting of the Association brings forth the funds from a private source for the American medal.

That the American organization presents some important advantages not attainable in English societies is tolerably manifest. Whether these advantages are of equal importance to English photographers, and whether it would be equally possible, by a similar organization, to attain them, are questions for English photographers to consider. The subject is certainly worth consideration, and will gradually become more and more so. Existing photographic societies have a specific mission, and have done good service, and the establishment of another organization of the kind indicated by no means implies that existing societies should be superseded. But it is important to remember that whilst, in the early and immature days of the art-science, its technical improvement was of all importance, now that it has acquired a specific excellence, and has passed into a recognized profession or art industry, new interests require consideration. The welfare of a community depending for livelihood on the practice of the art becomes of primary importance, and if that welfare can be promoted by an association which shall secure consentaneous action in elevating the art, stimulating its progress, and advancing the interests of all connected therewith, surely it is worth consideration, discussion, and action. We throw out the hint, and leave it with our readers.

WASHED AND FUMED SENSITIVE PAPER.

The practice of fuming sensitive paper has never obtained general favour amongst photographers in this country, whilst it is almost universal in America. That the plan possessed great value has been repeatedly demonstrated, richer prints being obtained on paper excited on a very weak nitrate bath by the aid of ammonia fuming than could be secured with a very strong bath without such fuming. Mr. Penny, of Cheltenham, some years ago called the attention of the Photographic Society to this fact, and sent some excellent prints in illustration. A little less than two years ago a permanent sensitive albuminized paper, described as carbonate of silver paper, was introduced to photographers. This paper was comparatively insensitive, and kept perfectly good for an indefinite period, but, after fuming, it printed rapidly, and gave a fine rich print. We suggested at the time that this was paper prepared on an ordinary nitrate bath, and washed in water containing a carbonate, as we found paper so treated behaved in a similar manner; and also that the Cairier permanent paper gained in vigour and sensitiveness when fumed with ammonia.

About the end of last year M. Baden, of Altona, in a brief but interesting article in the *Archiv*, described his practice of washing his excited paper—of which a large stock was prepared at once—and fuming when required for use, a plan which in his hands answered perfectly. A subsequent article in the same journal entered into more detail, and claimed an absolute superiority for the washed paper, not simply in convenience, but in result. The advantages—besides that of keeping the paper without discolouration—are, that it is more sensitive, tones more rapidly, requires less gold, and gives better and more uniform results than the unwashed paper with its excess of free nitrate of silver.

So far as experimental verification of the principle is concerned, we satisfied ourselves at the time of the soundness of this position; but we have just received very important practical confirmation from Col. Stuart Wortley, who has lately employed this method extensively in the production of large prints. He says: "I do not hesitate to state that this is by far the most important modification that has been proposed since I first photographed, and we are much indebted to the German gentleman who first published the process. It is absolutely certain: a waste, mealy, or bad print is unknown to me since I have worked it. It prints any kind of negative in perfection, and is simply invaluable." Col. Wortley has sent us a batch of thirty large prints, from one day's work, as an illustration of the results obtained, and they fully bear out his high encomiums. They are, he states, from all kinds of negatives, some requiring an exposure of three hours, whilst others are done in fifteen minutes; but he finds that in all cases the prints are absolutely perfect. It is easy, he observes, with almost any method to get *one* good print; but here, in thirty consecutive prints, containing portraiture and landscapes, instantaneous and other pictures, is the evidence which practical men desire, before they accept a position as proven, in relation to any new operation in photography.

The subject is so important, the advantages to be gained so palpable and desirable, that it simply requires a statement of the facts, and of the evidence upon which the statement is based, to secure eager attention to this subject. In the warm and moist atmosphere which so often obtains during English summers, the patience of the printer is severely tasked by the paper turning yellow or discolouring in greater or less degree. A means of avoiding this is surely one of the greatest boons possible. But here this boon is offered in conjunction with other advantages, in the shape of increased convenience, economy, and uniformity. The additional labour is slight: the paper, after exciting, is floated on one or two other baths of water to wash the free nitrate from its surface, and is then dried as usual. If kept carefully excluded from the air it will remain without change for some time, and without especial care in keeping it will remain unchanged for some days It must then be fumed before use with ammonia, and the pads at the back may also be fumed. A good plan with paper in regular use is to prepare sufficient for a few days' consumption, and keep it in a box with a perforated bottom, underneath which is a drawer containing carbonate of ammonia, or a dish with liquid ammonia. It should be remembered that the printing and toning are both a little more rapid, otherwise prints may be lost by over-printing and toning at the outset. We shall be glad to learn the experience of our readers who may adopt this method of printing.

FINE ART EXHIBITION AT CARDIFF.

An exhibition of works of industry and fine art is announced to be held in Cardiff, to be opened on the sixteenth of August next, and close in the middle of the following month. For various reasons we have pleasure in directing the especial attention of our readers to this exhibition, and asking those who are able to aid in securing a worthy representation of the art. It is to be held under very trustworthy auspices; it will be liberally managed; there will be five thousand feet of wall-space devoted to pictures and photographs; and photographs are placed in their legitimate position as works of art in the class devoted to "paintings, drawings, photographs, and sculpture." It is announced that the carriage of the works of all who receive a circular inviting them to contribute will be paid to and from the exhibition; those of our readers, therefore, who are willing to contribute should first communicate with the secretary to secure proper arrangements. We extract the following conditions from the published announcement:—

The last day for receiving contributions will be Saturday, 6th August.

The committee will pay the carriage of all works to and from the residence of the artist to whom this circular is sent.

Messrs. Green and Co., of Charles Street, Middlesex Hospital, will collect and pack pictures of metropolitan artists for this exhibition. All other pictures must be sent direct.

All works contributed (except architectural drawings) must be in gilt frames, and must have the name and address of the artist, the subject of the picture, and the number, if more than one, conspicuously marked on the back. A note must also be addressed to the Honorary Secretary, containing a list of the contributions, with their description, for the catalogue, and the price (including frame) if for sale. Any work of art sent without a statement of price will be considered as not for sale, and will be so marked.

A commission of five per cent. will be deducted from the catalogue price of any work sold while in possession of the committee. Pictures being sold through private agency will not exempt the exhibitor from payment of the commission.

The committee will take every possible care of the works entrusted to them, but will not be responsible for any injury they may accidentally sustain while in their custody, or in their transit to and from the exhibition.

Cardiff, June, 1870. E. Payne, Hon. Sec.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Double Salts of Iodine and Bromine—Prices of Patented Articles—The Pretsch Controversy—The Alberttype Specimen—Societies.

I was much interested in reading the paper by Dr. Van Monckhoven on double salts of iodine and bromine soluble in alcohol and ether. The pen of an accomplished experimentalist, a shrewd observer, and trustworthy narrator like Dr. Monckhoven has been too long idle, and it was pleasant to find a promise of renewed journalistic activity on his part. The question of the free solubility of various iodine and bromine salts in collodion is one of greater importance to photographers than is perhaps generally recognized. That the quantity of collodion depends very much upon the base associated with the halogen with which it is combined there can be little doubt; but as it happens that many of the salts are very sparingly soluble in ether and alcohol, their modifying qualities are rarely available. The salts of potassium furnish an instance. For many reasons their use is very desirable, but, owing to the extremely spare solubility of bromide of potassium, they are not available in cases where a full dose of a bromide is required. The ready solubility of the salts of cadmium has induced their general use in collodion with, it must be admitted, in many cases, great advantage; but their great tendency to gelatinize the collodion is a serious drawback to their value. There is one fact mentioned by the worthy doctor which, if verified, will prove of great importance. He states that if the double iodide of potassium and cadmium be employed in collodion, bromide of cadmium may be added without causing a precipitation of bromide of potassium. As most persons who have experimented in the manufacture and salting of collodion know, if bromide of cadmium in proportion much exceeding half a grain to the ounce be added to collodion containing iodide of potassium, a double decomposition takes place, and a precipitate of bromide of potassium is thrown down. In my own experience, when iodides of cadmium and potassium have been triturated together with a little alcohol, and perfect solubility secured in collodion, the addition of bromide of cadmium to the collodion, if in proportion exceeding that I have named, has invariably caused turbidity and precipitation. The method of adding water, pointed out by Mr. Gordon in your pages, has materially modified these conditions; but if the use of the carefully prepared double iodide will permit the addition of a bromide freely, a great advantage will be attained.

The letter of "Ingenio," in your last, will interest many readers, as the subject strikes home to many breasts. At times I must confess I have been impressed with the bad policy of patentees in charging excessive prices for their inventions. It is perfectly true the process of invention and patenting involves many expenses not apparent on the face of the result; but would it not be wiser for the patentee to secure his profit by extended sale, rather than by exorbitant prices? How far "Ingenio" is right in his illustration I cannot pretend to say. In reference to Mr. Hart he is manifestly unfair. To give force to his argument he depreciates the "pavilion studio" below the truth. He speaks of it as covered with calico, whilst you describe it as covered with canvas, and a friend informs me that it is a material resembling sail-cloth in its substance and power of resisting weather. Now as the latter would cost three or four times as much as the former, the fact forms an important item in the cost of the studio. Mr. Hart's idea is certainly a good one, and ought to be extensively adopted. The price does not strike me as exorbitant, but rather unusually reasonable; of that, however, Mr. Hart knows more than those who have not had to make such an article. Probably he would make one covered with calico, should any one desire it, for less; but calico would be a poor covering for resisting the weather. In the case of Mr. Edwards' ingenious printing frame, I fancy it does seem somewhat odd to charge a price for the frames which, although not unreasonable, ought to be handsome payment, and require the payment of a licence fee to authorise the purchaser to use that which he has bought. Of course Mr. Edwards will answer, very justly, that anyone disinclined to accede to the terms has no grievance, as he is not compelled to avail himself of the new facility if he does not think it will be worth his while to do so. This is quite true, and no one has a right to grumble; but one cannot help asking, is it wise to limit the probable sale in this way? The Autotype Company have set an admirable example before patentees. They permit portraitists to use their patents without any payment except that involved in the purchase of tissue, and, further, there is a rumour that they have resolved to issue the tissue at a reduced price. By the way, is it true, or not, that this company intend to proceed for damages against anyone making or using Swan's tissue? It is of some importance to the photographic public to avoid being dragged into litigation in such a matter. Ought not manufacturers, when such danger is possible, to give their customers some pledge of being held harmless in the use of what they may purchase?

The discussion as to the claims of Pretsch in connection with photo-galvanography has been already brought before photographers *usque ad nauseam*, and I do not intend to enter further into the subject. I just wish to say, however, since Mr. Dallas so unhesitatingly characterizes my statement of a fact within my own knowledge as "moonshine," that almost the entire argument of Mr. Dallas rests at present on his *ipse dixit*, and is opposed in various parts to the convictions of other trustworthy gentlemen. He may be strictly correct; in his general facts I have no doubt he is. He would gain more general credence if he were not so absolutely sweeping in his statements. The letter of a practical engraver in your last shows that he is not technically accurate on what constitutes "touching," and hence his uncompromising treatment of all who hold opposite views to his own in the matter of this discussion is, at least, a little unwise. I can only regret that so little of a really practical nature has been evolved in the whole discussion.

Few things could have been more interesting and suggestive in regard to the new photo-mechanical printing processes than the recent example of Herr Albert's process you presented to your readers. Printed in printer's ink, quite resisting sponging with water, on plain paper, and with a margin, the complete identity of the picture with ordinary prints in fatty ink was proved. The view of the penetralia of the printing office suggested the similarity of the process of printing to that employed in ordinary lithographic operations; whilst the gradation, delicacy, and freedom from grain made the prints undistinguishable from a fine plain paper print. For book illustration nothing more suitable can be desired.

The societies generally are taking holiday, which means, with many of their members, taking pictures, and working very hard at it. I hope we shall see some of the results at the next exhibition in Conduit Street.

THE PARIS PHOTOGRAPHIC EXHIBITION.

[FROM OUR OWN CORRESPONDENT.]

Second Notice.

Landscape photographs monopolize but a small portion of the exhibition, and are, with the exception of the works of some dozen exhibitors, of no extraordinary merit. Comparisons between the processes by means of which the pictures have been produced are difficult to institute, for we generally find that competent masters are able to secure good results just as well with dry processes as with the wet. If, for instance, a frame of fine pictures is exhibited stated to have been obtained with some dry process or other, we may at first experience surprise and delight to find at last a process yielding such perfect and uniform results; other pictures by the same artist by other dry and also wet processes will, however, quickly convince the observer that the photographer is a man whose works, one and all, betray the hand of a skilful and artistic manipulator, and that the results in question are due less to the means by which they are secured than to the experience of the operator.

Ferrier, and Leon and Levy, as also M. Blanc, seem to possess a patent right in the production of the charming little stereo transparencies we all know so well; and fortunate, indeed, we are that such competent artists have taken up and vulgarised this branch of the art. A large collection of these photographs are exposed to view in stereoscopes, and in a vestibule darkened and fitted up especially for their reception; but the best way of appreciating the value of these pictures is to see them enlarged in an oxy-hydrogen lamp upon a screen. Demonstrations of this description take place at the exhibition once an hour during the day, and the effect of a fine sea view, or statue, such as the Venus of Milo, enlarged to its original size, is certainly a wonderful sight.

The best landscapes on paper are probably those of Robinson and Cherrill, with whose productions my readers are well acquainted; "Dans la forêt" (in the wood) and "6 heures 35 min.," lose none of their *éclat* by being hung upon the walls of the Palais de l'Industrie, and the fine sky studies in other pictures are, indeed, almost unique. Stuart Wortley's moonlight sea sketches are deservedly popular in the room, and prove very attractive among the Parisians; they are, I believe, a selection from the fine studies recently exhibited in Conduit Street. Harrison, of Courbevoie, sends a selection of landscapes which, although of considerable merit, hardly come up to his frames of last year; and Slingsby, of Lincoln, has half-a-dozen of the most popular of his studies. England forwards a large collection of both dry and wet results, specifying upon the frames the particular method of preparation; they are mostly views in the Tyrol and Switzerland, and are endowed with that soft, hazy, and atmospheric effect which has made the name of England known throughout the continent. Alcos', of Bellevue, pictures of the South of France and Versailles are very fine, and deserve high praise; they are taken by the Taupenot process, and are in every way equal to wet collodion photographs.

Two modest little frames by M. Constant-Delessert, of Lausanne, whose name as an experimentalist is widely known, deserve mention; the one represents the coffee and the other the gum process. For clearness and definition they are unequalled; but the tone is, perhaps, a little too warm to suit every one's taste. Charnaut, of Geneva, likewise deserves honourable mention for landscapes, a large picture of the Grands Mulets, which must have been taken under very considerable difficulty, being exceedingly good. Jeanrenaud, of Paris, exhibits views printed in carbon, all of which betoken much skill; and one little picture, that of a barn and farm-yard, is excellent. Matzner, of Vienna, has a Swiss landscape of no ordinary merit, bold, yet soft and delicate; and Sebah, of Constantinople, exhibits some fine panoramas of very large size; an interior of the Mosque of Ste. Sophie, made up of three or four separate portions, is cleverly contrived.

Relvas, of Portugal, exhibits some good marine sketches, and also some excellent photographs of animal life; M. Krone, the President of the Dresden Society, sends a variety of interesting results, showing the application of certain dry-plate processes and carbon printing. Magny, of Coutances, has a collection of frames of Algerian views; and M. Janssen and the South Kensington Museum are represented by a large series of Indian landscapes, which, however, are by no means equal to the handsome productions of Captain Lyon.

Holzamer, of Worms, sends some reproductions of the Luther monument in that city; and Sanderson, of Manchester, also a few architectural views by the Taupenot process, which exhibit, however, a little hardness. Janicot, of Paris, has a capital enlargement of the Hotel de Cluny; Koch and Wilz, Cuvelier, Dontenvill, Garcin, Giroux, and Gaatzer also show specimens.

Carbon printing is but poorly represented. M. Marion appears to have been very successful in his results, and shows some portraits *a la* Salomon printed in permanent pigments, which appear very full of promise. M. Braun has a large collection, mostly reproductions from old masters; and M. Jeanrenaud and M. Teissiere, of Marseilles, have also some good work. M. Vidal shows a collection of specimens produced for the most part by the Johnson process, illustrative of certain comparative experiments; the conclusions to be deduced from the results are, however, not very evident or striking.

M. Girard exhibits more of his clever micro-photographs, some of which are shown to great advantage on the screen; and Mr. Thomas Higgin, of Liverpool, sends some enlarged transparencies of subjects of the same description; one of these, "the tongue of a blow-fly," is exceedingly fine.

Of mechanical processes, the Albert-type is represented by M. Albert; prints of large dimensions, some measuring two feet long, are shown, and these of excellent execution. "The Pardubitz hounds" is a splendid picture, and another of a portico with exotic plants very soft and delicate. M. Arosa sends some specimens of Tessie du Motay's photolithographic process, which may be considered the father of Albert-type, and M. Amand Durand, of Paris, some fair specimens of his own helio-engraving process. Goupil and Co. exhibit several very nice prints by the Woodbury process, some of them being portraits from life; these latter, although excellent in detail and softness, are scarcely equal to the presentation print recently issued in the *Philadelphia Photographer*—a girl sitting in a window.

A collection of reproductions by Bingham (Ferrier) finds a place in the exhibition, and are certainly superior to anything of the kind yet produced.

M. Lafon de Camarsac still retains his position as regards enamel photography, and leaves all other practicians in the art very far behind. M. Deroche shows some good work, but his pictures are a little hard, a fault also observable in those of Geymet and Alker. Richard, of Geneva, has some pretty reproductions upon china, which are very creditable.

Ducos du Hauron exhibits a couple of specimens of coloured transparencies taken by the method recently made known by him, viz., by taking three transparent images of the same picture—one blue, one red, and one yellow—and superposing the three. I was agreeably surprised at the sight of one of the specimens especially, which shows that at least something may be done in this manner of proceeding. Examples of heliochromy by Niepce de St. Victor and Becquerel are also to be seen.

On the whole the exhibition is a satisfactory one. Some little improvements might, it is true, be made in the arrangements—such, for instance, as hanging the pictures in something like consecutive order, and not placing them too high up; a few of the frames were, moreover, without name or number, and, therefore, incapable of being identified. Several of the pictures in the catalogue were nowhere to be found, and others bore a wrong number. Such faults as these may be forgiven in a temporary exhibition organised in a few days, but with a collection which is to remain open many months more care and attention are looked for.

Seventeen British exhibitors are placed in the catalogue, their names being Blanchard, Brookes, Brownrigg, Cameron, England, Higgin, Hubbard, Lafosse, Lewis, South Kensington, Lyon, Robinson and Cherrill, Sanderson, Slingsby, Wane, Wortley, and Fox Talbot. As many as twenty-one German photographers exhibited.

PHOTOGRAPHIC RAMBLES IN SOUTH WALES.

No. 3.

BY THOMAS GULLIVER.

BISHOPSTON VALLEY.

ABOUT three miles from Swansea is the village of Black Pill, and the carriages on the Swansea and Oystermouth Railway stop opposite the "Woodman" Inn, by the side of which is a lane leading to Bishopston Valley. A visit to it will well repay the trouble of getting there; or the traveller may come down by the Llanelly and Swansea

Railway, but the station is not so near to the "Woodman." The visitor will do well to keep to the left until he arrives at Merton Common. Here the road branches off to the right, down another shady lane, terminating in sight of Bishopston Church. Here an excellent view may be photographed. A thatched cottage on the right hand, two or three overhanging trees nearly meeting over the road, a bridge in the middle distance, with high cliffs, hills, and dales far away, form altogether a fine subject, particularly for a stereoscopic view. Keeping to the road by the church, we come to a narrow rough road, with loose pebbles, and hedges on each side. A walk of a few score yards will bring up to the head of the valley, which winds its course in and out for two and a quarter miles, combining a series of views unequalled in any part of South Wales.

We first come to the Daw-pit; but why so named I cannot say. It is evidently caused by a large portion of the hills having at some far distant period sunk down, leaving a vast hollow, now overhung with ferns, wild briars, and other plants; while from the projecting rocks above droop mosses, lichens, &c., in the wildest confusion, and in the foreground are large masses of lightly coloured rocks, giving fine effect to the dark hollow behind. This view must be taken in early morning, or the beauty of it will be lost.

For the next half mile the valley is clothed in ferns on each side. Then we come to a small river, which partly runs under ground, for in places it can be heard in the openings of the stones, but not seen. Lower down it makes its appearance, and winds about the valley until it is lost in the sea near Pwl-Ddu. Pursuing our way, we come to a small rude stone bridge. Near to this is a splendid view on a calm day. It was taken a short time since by one of the first amateur photographers in the kingdom. It has also been taken by your humble servant, and by several water-colour artists; and a beautiful picture it makes. Taking the road in the centre, and turning a little to the left, we get several other views well worth attending to. Another half mile or so of road brings us to

Pwl-Ddu Point.

Here are two or three cottages at the foot of the hill, a rough, stone-covered beach, huge broken rock, and, stretching away in the far distance, the blue waters of the ever-changing sea. I well remember my last visit to this spot, one lovely day last May, when a worthy friend, his handsome dark-eyed daughter, and myself wandered on at leisure, securing a number of nice negatives on our way; we arrived here, but rather tired, and were glad to avail ourselves of the welcome of a modest-looking public-house, and we did justice to the bread and cheese and beer.

Near to Pwl-Ddu is Bacon Hole, a curious cave, where have been found bones of various animals who once found here a resting place. We did not visit this spot, as the enemy was drawing on, but crossed a rather rickety foot-bridge up the side of the cliff through a little plantation, and into a long narrow lane on the other side of the valley on to the village of Merton, again crossed the common, and into the road, passed Woodland Castle lit up by the beams of the setting sun, and arrived at the "Woodman" Inn in time to catch the up train for Swansea.

AMERICAN CORRESPONDENCE.

Annual Exhibition, and Meeting of the National Photographic Association—Save the Negatives.

National Photographic Association.—The great event of the past month here has been the Annual Exhibition of our National Photographic Association, and the meetings held in connection therewith. As you know, Cleveland, Ohio, was the place, and June 7th to 11th the time appointed. I am glad to say that the whole affair was an entire and brilliant success in every particular. The building devoted to the exhibition was finely lighted on all sides, and is one of those vast structures, so common in our cities, erected for skating purposes in winter. The great arched roof was decorated with hundreds of flags of different nations—the stars and stripes of course predominating—and here and there some appropriate motto was hung, the principal one being: "Elevate your work, and it will elevate you." At the rear end, on the stage, was hung a huge camera, on which the varied emblems of the fine arts were painted, and encircling the whole the words: "Let your light so shine that others may see your good works."

The arrangements for hanging pictures was all that the most exacting could desire, so that the light on *all* the pictures was nearly the same. Wooden screens were erected, reaching, parallel to each other, from both sides of the hall to the centre, and on both sides of these were hung the specimens of photography from England, Scotland, France, Prussia, Russia, India, Austria, Italy, Ireland, Turkey, South America, &c., in almost every conceivable variety. Down the centre of the hall were rows of tables covered with glass cases full of lenses, chemicals, apparatus, &c., in quantities large enough to fill the building with photographs. Then there were stereoscopic museums, print-cutters, mounters, washing-machines, backgrounds, reflectors, furniture, and all sorts of traps in bewildering profusion. Mr. John Carbutt, during each day, astonished the visitors with printing by the Woodbury process. He had two presses running, and always a great crowd around him witnessing the novel process. His success was perfect, and he won many friends for that process of all processes. It was a mystery to the old disciples of silver and hypo how Mr. Carbutt could turn out by machinery such wonderful results.

Each evening Mr. J. H. Black gave a lantern exhibition, using his new electric light. This was an attractive feature also. The most novel part of Mr. Black's exhibition was the views on the coast of Labrador, and, in the Polar Sea, of Icebergs, &c., made last year during the Arctic Expedition conducted by Dr. Hayes and Mr. Bradford the artist.

The greater portion of the pictures on exhibition were portraits, landscape photography being but little represented, comparatively, except a large series of Yosemite Valley views, which were grand.

The foriegn pictures are familiar to many of your readers, especially the inimitable work of Robinson and Cherrill, George Washington Wilson, Salomon, Lœscher and Petsch, Reutlinger, Milster, and Grasshoff. The American work was most cheering and promising to those who have striven to elevate and improve it. Very great advances have been made during the past year, and I now think our portraiture will compare with that produced in any part of the world. This is, doubtless, mainly the effect of last year's exhibition. You well know how beneficial it is for men to mix with and rub against each other in all professions, but I have never seen so much brightness result from such contact as was evinced by the photography exhibited at Cleveland. Old chronic diseases, that formerly characterized the average work of this country—such as over-intensification, under-exposure, bad lighting, and ungraceful posing—are apparently ended, and now we have the most exquisite chemical effects, the richest modelling, and artistic posing and lighting that will gratify and satisfy the most critical. American photographers are *awake*, and a bright future is promised for our beloved art in this country.

The "Shadow" or "Rembrandt" picture is much in vogue here now. The photo-crayon is also working its way. Fine specimens of carbon printing, photo-lithography, and by the burnt-in process, were also exhibited by American photographers, and pictures by almost every known process and of almost every design. It was a sight well worth seeing, and Dr. Vogel says it exceeded the show made of photography at the Paris Exposition. We hardly dared expect that much, but to the ardent friends of the art the affair was most cheering and promising. The immense good that it will do towards elevating photographers themselves, and towards elevating their art in the eyes of the people, cannot be over-estimated. Over five hundred photographers visited the exhibition. Some came with earnest desire to learn, and they learned much to profit them. Others came doubting if "the thing would amount to much," but merely "to see what was going on." They went away with their conceit considerably filtered out of them, and became members of the Association before they left. New ideas were picked up by all willing to learn, and I am sure no body of men ever left a place with stronger resolutions to do better, and to work away cheerfully until they have attained the highest standard, than did the photographers who visited the Cleveland Exhibition. The foreign work was specially studied, and I am only sorry it was not more plentiful. As near as I could count, there were over 250 exhibitors in all.

Although part of the week was stormy, there was an immense attendance on the part of the public, as many as 2,000 people being there at one time. With such a brilliant exhibition, such a large attendance, and a large band discoursing sweet music, you can imagine that the scene was an interesting and beautiful one in the extreme.

The meetings of the Association were held during Tuesday, Wednesday, Thursday, and Friday, and were characterized by the utmost harmony and good order. Although the hall was crowded to excess, many standing all the session each day, yet all were too much interested to leave.

Nearly two hundred new members joined the Association during the sessions. Funds were raised to cancel the debt incurred in litigation with the Shaw and Wilcox Company and the Bromide Patent assignees. A relief fund for the benefit of the families of deceased members, and for those photographers who become enfeebled in their profession, was established, and over $1,000 subscribed on the spot. To this fund Samuel Holmes, Esq., agent of the Savill Manufacturing Company, gave $500, and Wilson, Hood, and Company, Philadelphia, Pa., $250. Mr. Holmes also agreed to present annually, for the society to award to the party making the greatest improvement in photography, a gold medal worth $100, and to the one making the next best improvement a silver medal worth $25. A board of trustees was appointed for the relief fund, and a committee on the Holmes' medals. During the sessions, Dr. Vogel delivered a congratulatory address, and also lectured on the subject of portraiture. Whenever he made his appearance in the room he was greeted with applause. He will never forget his visit among American photographers.

After the business sessions had closed, discussions on the practice of photography were held, with undoubted advantage to all present. And thus ended the annual convocation of our young Association, not yet two years old.

It is now an established fact, built upon broad principles, intended not only to aid its members to further progress in their art, but also to ensure them against poverty and evil, should fortune not smile upon them. I shall soon send you photographs of the interior of the exhibition hall, and also of a group of the members taken. Our next exhibition will be held in Philadelphia; and let me speak in advance for all the encouragement possible from your side of the water in the matter of pictures for exhibition. In good time I hope to announce a plan that will encourage foreign photographers to send their work here to their advantage.

We are now rid of all hampering patents of any account, and for American photography there is a bright day ahead. May it also be so with you, our collaborateurs, and, as we trust, our friends.

Save the Negatives.—Under this heading a few weeks ago I described a plan adopted by Messrs. Kilburn Bros., Littleton, N. H., for smoothing their paper so that the rough edges would not scratch the negatives. I made one mistake there, which, though quite a palpable one, must be corrected. I stated that the paper should be drawn over the steel edge, albumen side down, while the reverse is correct. You know the tendency of sensitized paper is to curl, the albuminized side inwards, which causes the corners of the paper to strike the negative and scratch it. In this way the negative is greatly injured, and, in time, rendered useless. Now, drawing the plain side of the paper over the steel plate edge as described makes the paper curl albumen side out, and it can be laid upon the negative, first the centre of the sheet, and then the ends, without a scratch upon the film. Not only does this plan save negatives, but it saves time also, for a printer can attend to two or three negatives when not bothered with the paper.

I have already exceeded my space, and must close, although there is much more I would like to say to you.—Truly yours, EDWARD L. WILSON.

COLLODIO-CHLORIDE PAPER: ITS PREPARATION AND EMPLOYMENT.

BY PROFESSOR KRIPPENDORF, OF AARAU.*

THE question of a suitable basis for collodio-chloride paper is a subject which increases every day in importance now that the material has become an article of commerce, and the beautiful transparent film can be transferred and manipulated with ease and certainty. For this reason I have essayed to prepare a paper of the desired description on a small scale, and, after several hundred experiments, have indeed arrived at a reliable method, by means of which the end may be attained; and this I have resolved to publish, by reason of the manner of preparing collodion paper being little known, and because, by my process, small quantities only of the material need be produced if desired.

My experiments were, in the first place, based upon M. Kleffel's communication, in which that gentleman recommends the rubbing in of the nitrate of silver into the collodion. The product thus obtained yields, it is true, a beautiful tone and vigorous images, but it involves, unfortunately, the expenditure of much time and trouble in its preparation; moreover, when large quantities of collodion are being dealt with, some considerable loss is sustained in the evaporation of the ether, a circumstance which necessitates further addition of that liquid, and thus alters the original proportions of the ingredients. Under these circumstances, I went back to M. Kleffel's earlier experiences on the subject, and made them the foundation of further research.

Good writing-paper of the ordinary description is taken and coated with gelatine. For this purpose the sheets are stretched out upon boards by means of pins, and the sizing applied with the aid of a brush. The size consists of a solution of gelatine in water of one per cent. strength, the gelatine being first placed in cold water to swell, and the vessel containing it afterwards held over a spirit-flame to bring about dissolution. The brush used must be of soft hair—a well-worn dusting-brush being suitable for the purpose—and this is cleaned in hot water after every time of its employment. When dry, the whole surface of the film should have a uniformly brilliant appearance. As in this condition the paper may be left for any period of time, it is well to prepare a large supply at one operation. Instead of applying the sizing with a brush, the paper may be coated by floating upon the solution of gelatine placed in a bath, but this method of working is a tedious one, and otherwise not to be recommended.

Three solutions are next prepared, as detailed below:—

1. Two grammes of nitrate of silver dissolved in two grammes of water.
2. Half a gramme of chloride of calcium dissolved in ten cubic centimetres (eight grammes) of alcohol.
3. Half a gramme of citric acid dissolved in ten cubic centimetres of alcohol.

It is most essential that the collodio-chloride to be used for coating the gelatinized paper should be of good quality. The impregnation of ordinary normal collodion with chloride of silver is beset with several difficulties, as the nitrate, ven in a free and finely divided condition, is difficult of lissolution, and easily precipitated; at the same time the ddition of a certain quantity of nitrate is necessary in rder to form chloride of silver on the introduction of No. 2 olution. The same difficulty is experienced if a normal ollodion is treated with a small quantity of No. 1 solution; he silver becomes precipitated, and the collodion ceases to ontain the amount of silver in solution necessary for the roper formation of chloride of silver. In ether alone, itrate of silver may be said to be insoluble, and in lcohol but very slightly so when in a cold condition, lthough the salt is rapidly attacked when the latter liquid s brought to a boiling temperature; on cooling, the itrate is of course again precipitated; but, nevertheless, the nost effective plan of preparing the collodio-chloride would ppear to be that of mixing it in a hot condition, so that all he nitrate will have been transformed into chloride of ilver before the former has again become separated.

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* *Photographische Archiv.*

From solution No. 1 thirty-six drops are taken and mixed vith forty-two cubic centimetres (thirty-four grammes) of ot alcohol, there being added at the same time two grammes f pyroxyline. After being well shaken, thirty-six cubic entimetres of hot ether are put in, and the solution agitated ntil the pyroxyline has dissolved, and a nitrate of silver ollodion thus obtained. After the lapse of a few minutes—efore, therefore, the mixture has cooled—four and a-half ubic centimetres of solution No. 2 are gradually added in he dark and during constant agitation of the collodion, a imilar quantity of solution No. 3 being subsequently added n like manner; the solution is finally shaken for about a uarter of an hour, and then allowed to remain for some ime carefully screened from the light.

The collodio-chloride has a white, opaline colour, similar o that of the iodide film when taken from the dipping-bath; t is by no means so sensitive as iodide of silver, but blackens ike this when exposed to light. Thick normal collodion one gramme of gun-cotton dissolved in fifty cubic centimetres of ether and alcohol) becomes quite dark if treated vith but a few drops of collodio-chloride, and may, in this tate, be used with much effect for the manufacture of collodion air-balloons, which then assume a very brilliant colouring. The electrical qualities of collodio-chloride are, moreover, not inferior to those of normal collodion, if not even of igher value, and are therefore deserving of further study. As the chloride of silver is combined with the collodion, ot chemically, but as a mechanical mixture, it has a tendency, owing to its high specific gravity, to fall to the ottom, and thus rob the collodion of its power; owing, owever, to the thick consistence of the collodion, the hloride is kept for weeks in suspension, and the collodio-hloride may at any time be restored to its original condition by sharp agitation.

The next step to be considered is that of coating the paper. he gelatined paper is stretched upon a light cigar plank, y the aid of a few pins, in such a manner that the lowest orner of the sheet overlaps the board, and, in order that the ollodion may not run off at the sides, the four edges of the aper are bent up. The collodion is poured upon the gelatine surface from a short distance only, in a liberal manner, o that the paper becomes rapidly coated, and but little loss f ether is sustained; the board upon which the paper is tretched is moved to and fro in the manner of a negative, o avoid the formation of any structures in the collodion, nd the whole operation is, of course, conducted in the dark. The superfluous liquid is allowed to run off at the lower orner, above indicated, into the bottle, the last drops, however, being caught up in a vessel set aside for the purpose, s it is not wise to allow the drippings to fall back into the tock-bottle. When dry, the collodionized sheet is placed n the vapour box, and exposed for the space of a quarter f an hour to the action of carbonate of ammonia fumes. The difference exhibited by fumed and unfumed collodion paper is quite as striking as in albuminized pictures. Inferior, unsuccessful collodio-chloride has yielded me fair, and even satisfactory pictures, when the paper was fumed, while otherwise the prints produced were without force and vigour. The paper possesses the disagreeable propensity to roll up,* and for this reason it is well, after fuming, and when in a perfectly dry condition, to place the sheets in a press, or inside the leaves of a large heavy book, the edges or margin of the sheets being in the first place cut off. To chemists who occupy themselves with photography, I would, in passing, throw out the intimation as to whether it is not possible to replace the operation of fuming by the addition of some substance to the collodio-chloride.

We now come to the subject of exposure. The paper, which has been kept in a flat and smooth condition, is placed in the printing frame, and exposed to light in the ordinary way. It has been maintained by many photographers that collodion paper is more sensitive than the chloride film in the albuminized paper. Any great difference between the two I have failed to discover; but this much is certain, that fuming notably increases the sensitiveness of the film. The colour assumed by a fumed print distinguishes itself by its brilliant deep-blue and exceedingly vivid character, the tone being much finer than that generally seen in an albuminized print. On the other hand, the unfumed paper, while possessing equal brilliancy, assumes, at the most, a violet—or, on short exposure, a brown—tone, which does not withstand the action of the toning and fixing baths so well as the deep blue tone. In any case it is well to allow the prints to develop themselves as vigorously as possible, and afterwards to preserve them in a press or under cover. In the operation of washing, the disposition of the prints to roll up has again to be combated, and this is best done by placing the pictures one upon another, and keeping them in that position with a glass weight. Failing a paper-weight, two pictures may be laid together, face to face, the tendency to roll up being thus counteracted by each other; but in this case the prints must be pulled sideways from one another whenever fresh water is added. As soon as the water runs from the prints clear and transparent, the washing is complete, and they may be at once transferred to the toning bath. Good negatives yield such beautiful tones, as a rule, that the operation of toning is quite unnecessary. The various gold baths with which I have experimented were seldom so intense as to impart a black tone to the prints, or, on the other hand, sufficiently strong to weaken and soften them. Among those I have tried are, in the first place, the chloride of lime baths, and these I cannot recommend under any circumstances, even in a dilute condition; more efficient are baths neutralized with carbonate or acetate of soda, especially if the amount of water usually added is increased about fourfold. But much better is it to have recourse to fuming, by means of which an agreeable deep blue or almost black tone is obtained, which is but little altered in the hyposulphite bath; only it is necessary in such case that the negatives be good, and that the collodio-chloride paper be not too old. Care must be taken that the pictures are toned and fixed the same day that they are printed, as otherwise the hypo bath produces a reddish brown tone, or one even of an ugly yellow.

The fixing solution is prepared in the proportion of one gramme of hyposulphite of soda to ten grammes of distilled water, the prints being allowed to remain in the liquid for about a couple of minutes. As regards the period necessary for washing the collodion paper, I possess no positive information; but experience inclines me to the belief that instead of an immersion for four hours, the short space of half an hour is amply sufficient. Pictures which I prepared four weeks ago, and which have been mounted as transparencies, and been exposed uninterruptedly to the sun, are still as fresh as when first produced, although they were merely washed in a basin in three changes of water. With but imperfect washing, therefore, pictures of this description promise considerable permanence by reason of the stout collodion film withstanding the action of the hyposulphite solution more effectively than porous paper, which, when even thoroughly washed, still contains a certain quantity of the salt.

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* This quality may, to a great extent, be obviated by the addition of a little glycerine to the collodion.

The last and most interesting stage of the process is the transfer of the hitherto friendly adherent collodion film. A print is laid face uppermost in a gutta-percha vessel filled with hot water. The gelatine, which lies between the paper and the film as the cementing body, and which is insoluble in cold water, is quickly removed by the hot water, and the collodion image, without further manipulation, at once leaves the paper. A perfect separation need not, however, be awaited, for as soon as the film begins to leave the corners of the paper, the whole is taken from the bath, and laid face downwards upon a sheet of well polished glass: then, by partially immersing the plate, it is an easy matter to fit the material square and flat upon the glass, and to remove the paper, leaving the collodion film safely adherent to the polished surface. This latter operation is best done by the aid of an ordinary pin, and will be found after a little practice easy of execution. Indeed no difficulty whatever need be feared during the whole process. The first picture will at once be found to be successful, and any accident to the film is on no account to be anticipated, for the latter is so tough and strong that much stretching and pulling is necessary to cause it to tear when it is desired to do so purposely. The film, adhering to the glass, is brushed over with a soft camel's hair pencil dipped in hot water, and thus freed from any gelatine or foreign matter attaching to it. If the picture is for one's own use, the plate is again placed in the warm water, and the film raised by means of a couple of forceps, and placed in a pad of blotting-paper, where it is allowed to dry previously to further handling. It is not advisable to allow the picture to remain upon the unprepared polished glass, for, on drying, the film contracts, and splits off the plate in all directions. To prevent this, the glass must be previously prepared with a gelatine solution (one gramme of gelatine dissolved in fifty grammes of distilled water), and the collodion image allowed to dry thereon very gradually in some cool locality.

As regards the future of this branch of photography, its value ought not by any means be underrated. Should the surmises already expressed in reference to the permanence of the pictures be confirmed, there is no doubt that the process will come more and more into favour. No albuminized surface is capable of competing in beauty with that of collodion pictures, and whosoever may take the trouble to prepare such prints cannot fail to be impressed with the beautiful results obtained. With the brilliancy there is, moreover, combined a wonderful degree of sharpness, a circumstance rendering possible the production of any number of negatives from a transparency. Thus professional photographers who possess but one negative of an eminent individual may by this process easily multiply their *cliches*. The production of a good picture upon collodion is, it is true, more difficult, and, at the same time, a somewhat more costly operation than printing upon albuminized paper; but, nevertheless, the manipulations are shorter and simpler, and if a good permanent result is secured the questions of expense and labour naturally become of minor importance.

In conclusion, I shall be willing to transmit to any brother photographers in the neighbourhood small samples of my paper for their own private experiment.

REMARKS ON SILVER DIPPERS.

BY JOHN M. BLAKE.[*]

A SILVER, platinum, or gold wire properly bent would obviously make the best dipper. A plate could be taken out of the bath and transferred to the slide without the aid of fingers or forceps, and there would be no unnecessary dripping of silver solution than from the plate itself. The price excludes all but the silver. Such dippers were long ago proposed, but it is doubtful if they have been much used. Lately the subject came up in one of the journals, and a correspondent made the assertion that a portion of copper in the silver was of no consequence.

Trial of pieces of a silver spoon two years ago showed a most undesirable action of the bath solution upon them. There was a solution of the copper in the alloy, with the deposition of an equivalent of silver by galvanic action. This pure deposited silver presented the peculiar surface familiar to those who have deposited copper in thick masses by electrolysis. The matter was then dropped for a time, until recently a friend had succeeded in making a dipper of a Mexican coin, which, it is stated, are made of purer silver than the American. The coin was cut into a spiral, and straightened and forged, and fragments melted on with a blow-pipe, until finally a neat square bar of small thickness was produced. This was bent into a dipper and immersed in the bath. A few minutes sufficed to cover its surface with small granular crystals of silver. As an experiment, it was laid in a dish with enough bath solution to cover it. In a few days the solution became green with copper, and crystals of silver of considerable thickness were formed upon the alloy. This treatment made the dipper brittle and therefore of no value, although it may have removed the greater part of the copper. Bad behaviour of the bath afterwards, in which the dipper had been immersed for a few minutes only, was attributed to the introduction of copper.

In order to arrive at a definite conclusion as to the amount of copper that might be alloyed with silver consistent with safety to the bath, I made several alloys of these two metals by means of a blow-pipe and an assay balance. The alloy containing five per cent. of copper showed unmistakable signs, by the deposit of crystals of silver upon it, of being acted upon by a forty-grain bath after fifteen minutes' contact. Lest this rapid action should be due to an imperfect admixture of the metals, the alloy was again melted at a high temperature and hammered, then cleaned bright and re-melted, and again cleaned. The deposition of silver upon it could be seen after four minutes' action of the bath. The three per cent. alloy showed a deposit of silver after half-an-hour in the bath. It was re-melted twice, and cleaned from oxyd to a dead white surface in nitric acid, then washed and returned to the bath. The action was not now noticed. A small portion of bath left in contact with alloys containing eight and five per cent. of copper dried away, leaving crystals of nitrate of silver coloured green by copper. This did not occur with the three per cent. alloy similarly treated.

Since the five per cent. alloy was so obviously acted upon, it will be advisable not to trust to a three per cent. alloy for the sake of economy, but rather to use silver made as pure as possible for the manufacture of dippers.

MAGNESIUM AND ELECTRIC LIGHTS AS APPLIED TO PHOTO-MICROGRAPHY.

BY BREVET LIEUTENANT-COLONEL J. J. WOODWARD,

Assistant Surgeon, U. S. Army.[*]

[The following report is addressed to the Surgeon-General of the U. S. Army.]

I have the honour to inform you that on the 25th of October last I began to conduct in person a series of experiments, intended to devise means for escaping certain difficulties which had hitherto prevented the successful preparation of photomicrographs of specimens selected from the valuable and daily increasing series of permanently mounted microscopic sections of normal and pathological tissues, which form so interesting a portion of the treasures of the Museum. In these experiments I used the sun as a source of illumination, and, following the rocess which I had described in full elsewhere,* I had no difculty in arranging a method by the aid of which this class f objects could be photographed quite as successfully and eadily as the diatoms and other test objects which had preiously been so satisfactorily reproduced in this section of the Museum. I shall take occasion in the course of a few days to ay before you prints of some of the tissue-preparations thus roduced. At present it is my desire to call your attention to rtain important observations which I had the good fortune o make while my experiments were in progress, and which it ppears to me cannot fail to be of interest and service to all microscopists.

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[*] *Philadelphia Photographer.*

[*] *Journal of the Franklin Institute.*

During the last week of October and the first two weeks of November I relied wholly on the sun as the source of illumination for producing negatives. In this period, during which had but two perfectly cloudless working days, and several ractional days, on which my work was continually interrupted y passing clouds, I had ample opportunity to convince myself hat the uncertainty of the weather was a most serious hinrance to the preparation of successful photographs of microcopic objects, and I ceased to wonder that European microcopists, who are exposed to a climate even more variable than ur own, have not yet succeeded in placing the art of photo-micrography upon such a basis as to make it a convenient nd habitual auxiliary in all microscopal investigations. This desirable end I believe I have attained; but it has been by esorting to artificial lights, and thus making the success of the rocess wholly independent of the weather.

On the 12th of November I commenced a series of experiments with artificial lights, which were most fortunately rowned with success, both the magnesium and the electric ights proving adequate sources of illumination tor the production of photo-micrographs even with the highest powers.

For the production of the electric light I used a Duboscq's amp. set in motion by a battery of fifty small Grove's elements. I found that with this source of light photographs could be uccessfully taken with any power with which pictures can be aken by sunlight; and I was delighted to find, as I had anticipated, that the very exaggeration of light and shadow which has prevented the electric light from being generally adopted as a source of illumination in the preparation of photographs of the size of the object, or smaller, proved of immense advantage in the reproduction of the feeble microscopical images of highly magnified objects, and that the pictures were hence clearer and better defined than any photographs of similar objects I had hitherto seen produced by sunlight. I found also that the electric light was so much more manageable than sunlight as a source of microscopic illumination, that I could readily arrange it to produce negatives with much shorter exposures than are indispensable with the sun.

The magnesium light shared these qualities to a high degree, but I found that its best work was done when the object was not to be magnified more than a thousand diameters, and that there were certain limitations to its use on test objects which will be referred to in the sequel.

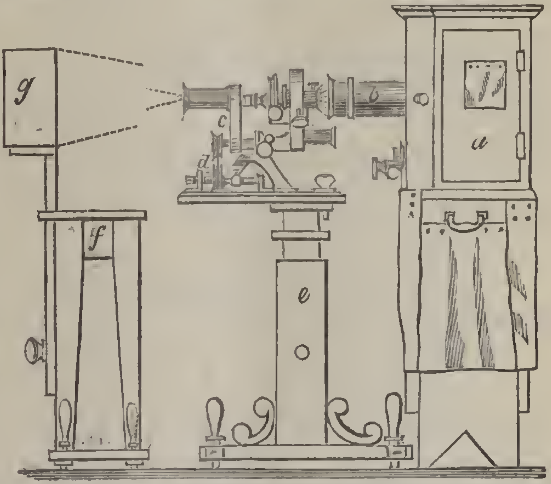
With one or the other of these artificial lights as a source of illumination I have prepared a considerable number of negatives of interesting microscopical objects, of which a few are appended to this report by way of illustration, while the others will be laid before you in future reports on special subjects.

The magnesium and electric lights are mentioned as possible sources of illumination for the production of photo-micrographs by Dr. Lionel Beale, in the fourth edition of his "How to Work with the Microscope," p. 275. I am not aware, however, that any one has made successful negatives with high powers with either of these lights prior to the experiments here recorded. There are in the Museum a few photographs with low powers taken with the magnesium light by Dr. C. F. Crehore, of Boston, Mass., who kindly presented them August 3, 1866. Negative No. 90, Old Microscopical Series, Army Medical Museum, represents a few villi from the small intestine of a mouse, photographed by the electric light with a 4-10th objective of Wales arranged to magnify 84 diameters. The electric light was produced by 40 Bunsen's cells, and, as I had no electric lamp at the time, I held the carbon points in two retort holders, and managed, as best I could, during the exposure, the uncertain light thus produced. I know of no other photo-micrographs than the above to have been actually made by the electric or the magnesium lights; certainly if any have been, they have not been sufficiently successful for their authors to be willing to give them any degree of publicity. I have no hesitation, therefore, in claiming for the Museum and for myself the credit of having demonstrated the serviceable character of these lights as sources of illumination for the preparation of negatives with high powers, and of having devised a simple method which brings their use within the reach of every microscopist.

I propose now to sketch briefly the process by which negatives of microscopic objects can be conveniently produced with these artificial lights.

1. The electric light is by far the best of all artificial lights for the production of photo-micrographs, and, when used as I am now about to describe it, it is both convenient and economical. I use a Grove's battery of fifty elements. The battery is placed just outside of the operating room in a closet from which the fumes escape through an earthern pipe into the main chimney of the building. This battery was furnished by Mr. William Ladd, Nos. 11 and 12, Beck Street, Regent Street, London, W. The rubber cups are $4\frac{3}{4}$ inches high, $3\frac{1}{4}$ wide, and 2 thick. The platinums are $5\frac{1}{2}$ inches by $2\frac{1}{8}$, and weigh about 60 grains each. The zincs are bent on themselves, so as to present a part of their surface on each side of the platinums, and weigh, when new, about a pound apiece. Mr. Ladd furnishes these batteries in trays of ten elements, at five pounds sterling per tray, and I find that a battery of five trays is sufficient for most purposes. Seven pounds and a-half of strong commercial nitric acid, and three of sulphuric, diluted with ten times the quantity of water, is sufficient to charge this battery, which will then produce the light continuously for from three to four hours. The cost of running the battery for this time, including in the estimate the amount of zinc consumed, and the cost of amalgamating every third or fourth time of using, is very moderate. I make it a practice to have the battery washed out, the acids thrown away, and the porous cups put to soak immediately after I have done the day's work; and all this is so simple that I have had no difficulty in instructing an orderly to do it, so that the management of the battery does not occupy any part of my time.

The Duboscq's lamp, the microscope, and the plate-holder are arranged in a dark room, which enables me to dispense with the use of a camera. The general arrangement of the apparatus is shown in the cut.



The electric lamp of Duboscq (*a*) is placed on a stool against the wall at one end of the room, and its light concentrated by a pair of condensing lenses (*b*) on the lower lens of the achromatic condenser of the microscope. The microscope (*c*) (a large Powell and Lealand's stand) is placed on a small table (*e*) which is so arranged that it can be lowered or elevated at pleasure, and can be levelled by means of three levelling screws at its base. The plate-holder (*g*), also arranged so that it can be raised or lowered at pleasure, is supported by a small table (*f*), which stands on three levelling screws. The floor of the apartment is quite level. The lenses employed for the microscope are those of Mr. William Wales, of Fort Lee, New

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* Circular No. 6, War Department, Surgeon-General's Office, Nov. 1, 1865, page 148, *et. seq.* American Journal of Science and Arts, Vol. XLII., Sept. 1866.

Jersey, specially constructed for bringing the actinic rays to a focus. For powers above the ⅛th, however, I have found that the achromatic objectives of Messrs. Powell and Lealand, of London, answer an excellent purpose, and indeed that their immersion 1-16th exceeds in defining power any objective which has as yet come under my notice.

In taking photographs with this apparatus, I proceed as follows:—The electric lamp being set in motion, the table holding the microscope (which has previously been levelled) is raised or lowered, and moved from side to side, till the centre of the achromatic condenser is brought to the centre of the illuminating pencil proceeding from the lamp; the object is then placed on the stage, and carefully adjusted. A cell of plate glass, containing a saturated solution of the ammonio-sulphate of copper, is fixed just below the achromatic condenser, and not only prevents the admission of non-actinic rays, but excludes the very great heat which accompanies the electric light, and also moderates its effect upon the eye of the observer. The light thus produced is very agreeable to the eye, and I find myself able to work with it from four to five hours without fatigue. It has also the advantage that all the colours of the objects examined disappear, and the preparation appears black on an azure field, which resembles the sky on a clear day, so that the observer sees at a glance how the object will appear in the photograph (in which the same black lines or tints will be faithfully reproduced on a white field), and is thus enabled to arrange his achromatic condenser and other adjustments so as to produce the most satisfactory effect.

Everything having been arranged at the microscope to the satisfaction of the observer, the eyepiece is taken out, and the image allowed to fall on the ground glass of the plate-holder, which has previously been placed at the distance necessary to give the magnifying power desired with the objective employed. The operator adjusts the plate-holder to the right height, and sees that it is perpendicular to the optical axis of the microscope, which he readily does by observing that all parts of the field are equally in focus. He then takes out the ground glass, and finishes the fine adjustment with a sheet of plate glass and a focussing glass, after which the sensitive plate is inserted, the exposure made, and the operation is finished.

(To be continued.)

Correspondence.

THE AMATEUR'S PHOTOGRAPHIC PAVILION.

Sir,—It is not usual with me to make any reply to writers of letters who adopt anonymous signatures, but your correspondent "Ingenio" says he has called to see the Amateur's Photographic Pavilion, and been asked (?) £10 for one. Then, in the next paragraph, on Mr. Edwards's Patent Frames, he tells the public that we have each put an exorbitant profit on the outlay. "Ingenio" is no doubt great at figures. "Saving. . . . . here's the note" for him to set his "wits" to work upon, and see what an exorbitant profit I am likely to make should he honour me with his commands.

Material	220 feet of iron tubing at ...	per foot	0	2½
	51 attached iron connections, average, each		0	5
	80 yards of covering (*not calico*) at	per yard	1	0
	40 yards of scarlet binding at ...	"	0	1
	8 pieces of tape at...	per piece	0	4½
	12 dozen rings at	per dozen	0	3½
	12 dozen brass hooks at	"	0	2¼
	Small items, say		2	0
Labour	7 days' work for a woman at ...	per day	3	0
	4 " " man, at ...	"	4	0

Did I tell "Ingenio" that the pavilion, the iron, or the "calico" was patented, or did you, Mr. Editor, give him the hint in your lucid description on the 10th ult.?

In concluding, I think that the gentlemen at the Patent Office would soon find their "occupation gone" if the majority of mankind had so many "wits" that enabled them to evade patents and appropriate others' ideas.—Yours, &c.,

F. W. Hart.

PRETSCH AND PHOTO-GALVANOGRAPHY.

Sir,—It was not our intention to have taken any part in this controversy. Seeing, however, that the Photographic Society have shown an interest in the question—investing it with a dignity of which we hardly thought it worthy—we feel called upon to lay before you our experience of the practical working of Mr. Pretsch and his "Photo-galvanography," acquired by us as members of the working staff in the Company's works at Holloway during the year 1856.

We undertook office in this Company under express assurances, previously given both by Mr. Pretsch and Mr. Dallas, that the art was a workable and a perfected one, which, by the joint aid of photography and electrotype, would produce copper printing-plates that stood in no need of the engraver's skill to render first-class impressions on paper. We had not, however, been a week in the Company's service before we found, to our utter dismay, that the process was defective in almost every particular. Being a new art, and worked in modes that were altogether novel to us, we had need, at almost every step, to apply to the "inventor" for instruction and direction; he, however, gave us neither, our impression at the time being that he was not able to do so, which subsequent experience fully confirmed.

With respect to the copper plates said to have been produced by the Company *untouched by the engraver*, we beg to say that we have no recollection of any such plates being made; if there was an exception, it was in the "Venus de Milo," but even in that instance we believe the "lights" to have been scraped in. It is quite true that impressions were taken from untouched photo-galvanographic copper-plates, but they were valueless, being faint, indistinct, and smudgy. We have in our possession some of these imperfect impressions, as well as others of the better productions of the Company, illustrating the various stages of engraving through which their plates passed. These are open to the inspection of any who may feel sufficiently interested in the matter to examine them.

From the first starting of the Company to its final break up an engraver formed an indispensable member of its working staff. They were fortunate enough to secure the services of a very skilful and experienced gentleman, to whose ability the Company were mainly indebted for the notice their productions at one time received. We have no idea where he is now residing, or we should have sent this letter for his signature, being quite sure he would have no hesitation to endorse all that we have stated.

In his letter to the Photographic Society Mr. Pretsch expresses his willingness to show his untouched plates to anyone who may think it worth his while to go to Vienna for that purpose. We, however, submit our opinion that in every respect it would be much more to the point at issue were he to send over *impressions* from those plates, and so prove their integrity.

We beg to assure you, sir, that in penning the above we have endeavoured to confine our remarks to what came under our own personal observation whilst with the Company at Holloway. We know but little of what Mr. Pretsch had done in photo-galvanography previous to the formation of the Company (that little not being satisfactory), nor of what he has produced since its failure; yet of this we are quite sure, that whatever ability that gentleman may now possess for working the art called photo-galvanography, he acquired at the Company's works at Holloway in the year 1856, *and not before.*

We utterly disclaim all personal feeling in this matter, and, at the same time, assure you that this communication is entirely spontaneous on our part, unsolicited by anyone.—Yours respectfully,

Walter Petty, Photographer to the Company.
F. Ewbank Leefe, Electrotyper ditto

1st July, 1870.

STAINS ON PRINTS.

Dear Sir,—Scarcely a week passes that among your answers to correspondents may not be found the remark that "the stains on the print were owing to its being imperfectly fixed." But why, I would ask, should two, or perhaps three, prints out of a batch of a hundred not be fixed when all are subjected to the same treatment? The same stains have so often annoyed me that I have been endeavouring to ascertain the true cause, and I believe I am not far wrong in imputing them to the water used in washing the prints after fixing, the smallest decomposition, or leaves, or other vegetable matter to be found in it, being invariably the cause of stains exactly similar to those hitherto imputed to imperfect fixing.

Trusting this hint may be of use to some who are similarly troubled, believe me, dear sir, yours truly,

July 1st, 1870. A Sufferer.

Proceedings of Societies.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

e sixth monthly meeting of the present session was held on sday, the 28th ult., at the Free Public Library, William wn Street, the President, Mr. JOHN HENDERSON, occupying chair.

fter the minutes of the former meeting had been read and firmed,

vote of thanks was unanimously passed to the President his hospitality on the occasion of the trip to Furness Abbey the 15th June. Owing to various circumstances but a ited number had accepted the invitation, and the weather very unpropitious. Rain notwithstanding, above a dozen negatives of the venerable Abbey were taken.

Ir. J. A. FORREST proceeded to describe and illustrate the cess of carbon printing by single transfer. This, though ady published in the journals, may be briefly summarised e:—Gelatine tissue is the material used, and this may be chased ready prepared of any desired tint, at threepence foot. To sensitize this it should be floated on a three per t. solution of bichromate of potass in a dark room. The e taken to sensitize must depend upon the temperature: 5° one and a-half minutes; at 70° one minute, and so on. eft longer the tissue becomes dissolved. Dry spontaneously. pose under a negative which has plenty of detail, but no at intensity, for a third of the time it would take to produce ordinary silver print. The tissue has next to be transferred support, which may conveniently be ordinary albuminized er on which the albumen has been rendered insoluble by ping in methylated alcohol for about half-a-minute, and ing, or a patent prepared paper may be purchased for the pose. In a flat-bottomed dish into which about an inch th of cold water has been poured, the transfer paper is wed to soak for a minute or more, and the pigmented paper pressed *under the water* in close contact with a *larger* piece ransfer paper, all air-bubbles being forced out. The double et is next placed on a sloping glass slab, and gently pressed closer contact with an india-rubber edge, and subsequently h a roller of the same material. The compound sheet is v to be hung in a dark room for about half-an-hour. In ble light the development may be proceeded with by immersing the compound sheet in water just warm. This will ach the tissues, and when this is accomplished the old tissue y be thrown away. The picture is developed by replacing transfer tissue in the warm water, taking care not to touch surface with the fingers, or allowing it to rub against anyng. The paper must be lifted out by the corner and drained asionally; this will wash away the unaltered gelatine, and picture will gradually appear. This is to be then cleared h fresh warm water, or, if too dark, floated on hotter water a time, and washed in cold water to finish.

vote of thanks was passed to Mr. Forrest.

Ir. Atkins exhibited and described Cook's patent camera dry plates—an ingenious arrangement for holding a conerable number of plates, according to size, and exposing m successively, doing away with the necessity for dark slides changing boxes.

The next excursion was announced for Wednesday, the 13th y, to the Valley of the Weaver, Mr. Higgin having, for the ond time, kindly offered the use of a steamer for the trip.

The PRESIDENT alluded with satisfaction to the efforts now ng made by Mr. George Dawson to produce such a sensitive face on paper as would dispense with glass for negatives of ge size, and expressed a hope that members having leisure uld devote it to the fulfilment of this desirable object. He nplained of want of density in plates prepared by him even h a very slight addition of gum to the tannin bath.

discussion ensued, in which Mr. Wilson and Mr. Gough pressed their opinion that collodio-bromide, prepared *imdiately* before use by means of a tube mortar, would give any asity required, the plates referred to by the President being ated with collodion sensitized nine hours before use.

The meeting was then adjourned to the 26th instant.

OLDHAM PHOTOGRAPHIC SOCIETY.

IE out-door meeting of the above Society was held at Dunm Park, Cheshire, on Tuesday, the 21st of June. The weather was beautifully fine, with little or no wind, and there was a pretty good muster of members, who seemed determined to make the best use of the opportunity, by far the greater number working the wet process. There was about the average number of mishaps, such as the upsetting of tents, spilling of silver baths, &c. A prize was offered for the best picture taken on that day, which appeared to have the effect of stimulating the competitors to greater exertions, and many fine pictures were obtained. The members were hospitably entertained at Dunham Hall, the seat of R. Platt, Esq.

The usual monthly meeting was held at the Mutual Improvement Society's rooms, Henshaw Street, on Thursday evening, the 30th June, Mr. G. Hall in the chair, when prints were exhibited from negatives taken at the out-door meeting, and were much admired. The prize was awarded to Mr. Beverley, for a view of the Old Mill.

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Talk in the Studio.

A NEW USE FOR THE OXYHYDROGEN BLOWPIPE.—An American contemporary says that burglars are expected to employ this instrument, furnished with gas compressed in cylinders, to *melt out* locks of safes, &c. Those who have had experience in attacking large pieces of metal with this instrument know that no serious alarm need be felt: the rapid removal of the heat by conduction from the part affected would render any extended fusion impossible under the essential conditions of the case.

PREPARATION OF PURE OXYGEN GAS AT THE ORDINARY TEMPERATURE.—Prof. Boettger says that when a mixture is made of equal parts, by weight, of peroxide of lead and peroxide of barium, and there is poured on this mixture dilute nitric acid of a strength of 9° Beaume, and specific gravity 1·069, a current of pure oxygen, free from ozone and antozone, is given off abundantly. This mixture of the two peroxides alluded to may be kept together in a stopped bottle, in dry state, for any length of time.

INSTANTANEOUS DRY PLATES.—We have been favoured by M. De Constant with some charming examples of an instantaneous dry process. The subjects are marine views with moving shipping, street scenes with figures in motion, &c. The process is a mixture of the coffee and gum processes. We hope to publish details shortly.

SITTING FOR A PORTRAIT.—A Columbus photographer presented a revolver at the head of a gentleman who was sitting for his photograph, with the cheering remark: "My reputation as an artist is at stake. If you don't look smiling I'll blow your brains out." He smiled.

PHOTOGRAPHY AND PATHOLOGY.—An interesting application of photography to the study of skin diseases has recently been made by Dr. Balmanno Squire, of the British Hospital for Diseases of the Skin. The facilities for the satisfactory study of these diseases from actual cases have long been felt to be inadequate. Dr. Squire has produced a series of illustrations of the different varieties of skin diseases by means of photographs on glass coloured from life, magnified and displayed by means of the dissolving view apparatus. The perfection of the photographs, of the colouring, and of the apparatus used for the process rendered the exhibition at a recent demonstration of the Royal Polytechnic Institution very complete. The advantages of this method of teaching are, that the difficulties experienced by a large class of students in obtaining for every member of the class a distinct and satisfactory view of the patient whose case is being explained is by this means got rid of, since the image of the patient on the screen is so raised up and so greatly magnified as to enable every detail of the eruption to be seen by every member of a large class, and to be clearly pointed out to all of them by the lecturer at the time he is describing it. Again, various stages of the same eruption are capable of being shown at the same lecture, as, indeed, they were on this occasion. Cases of serious eruptive diseases, as scarlatina, have occasionally been mistaken in their early stages for milder affections, as measles; and it is only when the disease is fully developed that the practitioner finds, too late, that he has made a mistake. By the process proposed it is possible to show the most virulently contagious diseases—for examples, small pox—without fear of infection to those who are being instructed.

INDECENT PHOTOGRAPHS.—At the Middlesex Sessions, on

Wednesday, Joseph Groves was indicted for aiding and abetting Richard Groves, his brother, to sell and publish indecent photographs, and with having obtained a large quantity of similar pictures and books with intent to sell them. Mr. Besley (instructed by Messrs. Collette and Collette, on behalf of the Society for the Suppression of Vice) appeared for the prosecution; Mr. Poynter was counsel for the defence. The sale was made by Richard Groves on the 21st of August, at 33, Holywell Street, and the stock on those premises was seized on the 24th of the same month. After hearing the evidence, and that for the defence, Sir W. Bodkin said it was shocking to hear of any one descending so low as to engage in such a trade, and still more so to find one, like the prisoner, implicating his relatives, both old and young, in the same calling. The court would ill discharge their duties if they did not pass the extreme sentence of the law, which was that he be imprisoned and kept at hard labour for two years.

MINIATURE PHOTOGRAPHIC APPARATUS FOR TOURISTS.—Messrs. Murray and Heath have recently introduced the miniature apparatus for tourists devised by Mr. E. Edwards. The little camera, the outside dimensions of which are 3½in. square, with lenses for landscapes, architectural subjects, &c., and the necessary slides for twelve pictures or negatives, are very readily carried in the pocket, or, if preferred, can be packed into a small leather sling-case measuring 7 by 4 by 7½ in. deep, and weighing, with plates, 4¼lb. The small stand is not heavier or more bulky than an ordinary Alpenstock. Of course the negatives and prints thus obtained are very minute, some 2½in. square. Should a larger size finished picture be desirable, having once obtained the negative it can be enlarged to almost any extent.

RETOUCHING NEGATIVES.—A correspondent of the *Philadelphia Photographer* says:—"I have retouched my negatives to some extent for about two years, and I find the best way to prepare the surface for the pencil is to use a very thin varnish, and let it dry slowly. This gives a dead surface, easily worked upon, and marks can be erased if desired. Most varnishes, when first opened, are thin enough; if not, dilute with alcohol."

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To Correspondents.

ONE WHO TRIES.—Rapidity in a lens depends on its angular aperture, or, in other words, on its diameter in relation to its focus This is the fact which is enforced in the article you name. A moment's reflection would satisfy you that rapidity could not depend on the diameter of the lens only. The larger the diameter or aperture, and the shorter the focus, the more rapid will be the action; but it is very easy for a lens of two and one-eighth inches aperture to be slower than one of two inches aperture, if the focus of the first be "long," and that of the latter short.

E. H. states that he has been using Mr. Gordon's gum-gallic process with great success in all respects except a difficulty in securing sufficient intensity. So far as we know, there should be no difficulty in securing any amount of intensity by the use of pyro, citric acid, and nitrate of silver. Has our correspondent used the silver solution in intensifying freely? Has any of our readers met with a similar difficulty, or can any of them offer a suggestion as to the cause of E. H.'s difficulty?

CERA.—A dozen or twenty years ago there were in existence several works on the waxed paper process, but we doubt whether any of them are in print now, as the process has been for many years practically obsolete. One of the most recent and best of the wax paper manuals was that by the Rev. J. Lawson Sisson, published by Marion. We do not know whether it can still be obtained or not. There have been various articles on the subject in back volumes of the PHOTOGRAPHIC NEWS.

EXSUL APUD INDOS (Bombay).—The probable cause of the film sticking to the glass, and not leaving perfectly in your transferring operations, is the heat of the gelatine solution employed. If the gelatine solution be hot enough to melt the preliminary coating of wax, the film is apt to stick at those parts of the plate whereon the gelatine solution is poured. Instead of gelatine, leather collodion, as described in the YEAR-BOOK for 1869, is found to be useful for transferring. Read Mr. Woodbury's article in the YEAR-BOOK mentioned, and follow his instructions. 2. We are not commercially engaged in photography, and cannot tell the probable sale of instantaneous views of India and Indian subjects. Write Marion's, photographic publishers, Soho Square. They can give you the best information on this subject.

A SUFFERER.—The address of Messrs. Ohm and Grossman is Berlin; that of Mr. Jessen is Bradford, Yorkshire; he is agent in England for Messrs. Ohm and Grossman. Their results are very good, but not quite equal, we think, to those of Albert.

JOHN BECK.—If albuminized photographs are placed flat an under a weight before they are quite dry, so as to dry perfectly there is no great difficulty in keeping them flat afterwards. I they are allowed to dry without such care, the albuminized sid dries first, contracts, and curls round, stretching the plain pape forming the back of the print, and, drying in this state, it is nex to impossible to prevent the prints from curling afterwards.

SODA HYPOSULPH.—The card sent apparently contains considerable proportion of hyposulphite, and is not safe to use for mountin photographs.

T. GULLIVER.—We have not an example of the combination printing mentioned. All were for your acceptance. We shall hav pleasure in hearing more of your washing experiments. Thank

M. R. F.—The old exaggerated effects of relief in the stereoscop were generally obtained by the use of two cameras placed wi apart; but the effect was unnatural and unsatisfactory. In pr portion as the distance between the lenses is greater than th distance between the human eyes, the effect is untrue, and has tendency to dwarf the size of objects, as well as to increase t relief.

ALBERTGRAPH.—The address of Herr Albert is Munich. At pr sent it is his intention to patent the process in this country, a he has no wish to enter into any business arrangements until thi done. His long illness has delayed many arrangements. W shall have early information of any steps for the introduction the process into this country, and will duly apprise our readers.

ENQUIRER.—The address of Johnson and Son, refiners, is Basin hall Street, London.

PHOS.—So far as we know anything of Dubroni's apparatus, appears to us to be rather an interesting toy than a practic instrument. The idea of alternately using the same vessel f nitrate of silver and sulphate of iron would decide the question the mind of a practical photographer.

DAGUERRE.—Your case is doubtless a sad one, but a moment's r flection will convince you that an anonymous appeal for h would be of little avail. Your proper plan will be to ask so responsible person, whose name will be a guarantee of good fai to state your case and offer to receive subscriptions. It is agai our rule to insert such appeals in our literary columns, but will, in such case, insert a brief advertisement gratuitously if s by a person known and trusted by us.

W. W.—The fumes of carbolic acid, if breathed in larger quanti or for a protracted period, would doubtless be injurious. They occasionally employed, we believe, as having an anodyne eff In small quantity they are wholesome, having an antise tendency, and will often purify a tainted atmosphere.

J. PIERSON.—As a rule, ordinary distemper is unsuitable fo background intended to be rolled up. Oil flatting or soap flatt will answer best for the purpose. The colour is a matter of ta a dark, warm grey answers well. The hollow backgrou recently introduced in the United States is made of *papier ma* It would not be difficult, we think, to construct one; first mak a framework of cane or willow, then covering neatly with strip paper, and afterwards flatting. Of course a little skill ingenuity would be required, but a successful photographe often called upon to exercise these qualities.

NOTTING HILL.—The addition of a trace of carbolic acid to albumen will arrest decomposition, and produce no injur effects on the prints. You will find many articles on albuminiz paper in our back volumes. As albuminizing paper has pa almost entirely into the hands of those engaged in it as a tr and is rarely undertaken by photographers themselves, we have devoted much space to the subject very recently.

S. W. B.—It is wrong to put the word "copyright" on non-co right pictures. 2. You are not bound by the Act to place indication upon a picture that it is copyright. Placing the w "copyright" or "registered" on the print is a matter left to y own choice, and is not necessary for the legal protection of a registered picture. 3. The addition of ammonia to the fixing l is a great safeguard, and materially assists in perfect fixat Mr. Spiller recommends one ounce of carbonate of ammonia four ounces of hypo in a pint of water.

R. ISHERWOOD.—When you state that your toning bath does answer, you should state in what point it fails. Does it refus tone at all, or does it give bad tones? Make your toning bat follows:—Chloride of gold, four grains; acetate of soda, hundred and twenty grains; water, one pint; mix, and l stand a couple of days before use. Wash the prints slig before toning; take care never to touch the solution with fingers, especially with fingers which have been near hypo. paper should be floated on the silver bath, not immersed in it.

THOS. SINGLETON.—Received. In our next.

THOS. FORREST.—Too late for this number. In our next.

Several Correspondents in our next.

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Photographs Registered.

Mr. DOWNER, Watford,
Two Photographs of the late Lord Clarendon.

THE PHOTOGRAPHIC NEWS.

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CONTENTS

PAGE
Platinum for Toning Prints 325
Flat Baths for Negatives 325
Printing in Carbon Described in Two Chapters. By W. T. Bovey 326
American Correspondence 328
Permanency in Silver Prints 329
Magnesium and Electric Lights as Applied to Photo-Micrography. By Brevet Lieutenant-Colonel J. J. Woodward... 330
Transferring Negatives from One Glass to Another, etc. 331
Focus of Condensing Lenses 331

PAGE
A Photographer's Reception Room in America........ 332
Modes of Intensifying 332
Fern-Leaf Marks on Negatives.—Doctoring Baths, etc. 333
Correspondence.—Edwards's Combination Printing Frames—Paul Pretsch's Photo-Galvanography—The Cost of Patented Apparatus—Empty Bottles........ 334
Talk in the Studio 335
To Correspondents........ 336
Photographs Registered 336

PLATINUM FOR TONING PRINTS.

We have recently devoted some time to experiment with platinum as a toning agent. About half a dozen years ago we detailed the results of some experiments with platinum, rhodium, iridium, and some other of the non-oxidizable—or, rather, not readily oxidizable—metals as toning agents. The results, although interesting, suggested no reason for superseding gold. There were various difficulties in their use, and the results were not superior in any respect—in many cases not equal—to those obtainable with the ordinary gold toning solutions. Iridium—which, when used as an enamel pigment, gives the finest black the ceramist can produce—is comparatively poor when employed as a toning agent, yielding a weak, greyish black tone, and is, moreover, difficult to prepare and to use. With platinum, in our former experiments, we at times obtained a very rich, full-toned neutral black, but the toning was uncertain. If the solution were used acid, it bleached the print in a disastrous degree; if it were made alkaline or neutral, it was frequently difficult to secure any toning effect whatever.

In our recent toning experiments with platinum we were much more successful, and arrived at much more satisfactory conclusions. We have, with perfect certainty and control, been able to produce a series of very pleasing tones, varying from a rich, rosy, deep chestnut or chocolate colour, to a deep, intense, neutral black. In the series of purples and browns the tints are not strikingly different from those produced by gold, except in possessing a pleasing, fleshy tint and texture in the lighter half-tones, which was very effective in portraiture; but when the toning is pushed to a black the colour is essentially different from that of gold. The black is more neutral and intense, without any tendency to blueness or coldness.

There is, perhaps, no tint more pleasing than that of a fine gold-toned print, and we should not think of suggesting anything to supersede it for ordinary purposes. But, by means of platinum, certain varieties in toning may be secured which may possess their own specific value; and, as the cost of platinum is something like one-third of that of gold, and as its resistance to atmospheric influences is not inferior to that of gold, acquaintance with its toning powers is a question which should possess interest for all photographers.

The first difficulty the photographer experiences in using a platinum salt for toning arises from his natural impulse to use it in the same manner as chloride of gold, using one grain of the salt in five or six ounces of water. This is much too strong; it requires diluting with one or two equal proportions of water. We have worked satisfactorily with a solution containing one grain of bichloride of platinum in fifteen ounces of water. If the solution be too strong the deposition of the metal is very rapid, and the colour is grey instead of black. Again, if a solution of the ordinary bichloride of platinum be employed, it will convert the bulk of the silver image into chloride of silver, whilst depositing but very little platinum; and the print, after fixing, is a weak, grey, washed-out image. If the acid be neutralized, as in the preparation of a gold toning bath, the solution will bleach considerably, and give a mealy print during the first few hours after mixture, and will speedily lose toning qualities altogether.

The mode of meeting these difficulties is very simple. To tone satisfactorily the solution should have a very faintly acid reaction, but the free acid should not be hydrochloric acid, as that so readily attacks and bleaches the silver image. To meet the case it is necessary to neutralize the free acid with carbonate of soda. This may be added freely until a decidedly alkaline reaction is manifest; after which nitric acid is added to neutralize any excess of carbonate of soda, and in just sufficient proportion to produce a very feeble acid reaction. If the solution is just sufficiently acid to redden blue litmus paper slowly, it will serve. The toning bath in this condition may be used a few hours after mixing, and it will keep perfectly good—and, indeed, improving—for many weeks.

We have used a bath prepared as described for albuminized paper freshly prepared, for Durand's permanent sensitive albuminized paper, for collodio-chloride paper, and for developed collodion images. For all purposes it answers well, but for collodio-chloride prints and for wet collodion plates it is especially efficient. Nothing can exceed the excellence of the tints and the facility of toning this bath presents with Obernetter's paper prepared with collodio-chloride of silver. Developed images on wet collodion toned in this solution acquire a very fine black, rivalling that of a fine engraving.

The developed collodion images are of course toned after fixing; but in all other cases the prints are toned before fixing, as with chloride of gold. As the solution is used slightly acid, however, it becomes of importance to wash the print after toning, in order to avoid decomposition of the hyposulphite fixing solution, and consequent sulphur toning. As a rule, we found the print very little altered during the process of fixation.

FLAT BATHS FOR NEGATIVES.

It is a noteworthy fact, that although in this country the use of vertical dipping baths for negative nitrate solutions is almost universal, it rarely happens that any one who has tried the use of a flat bath has any desire to return to the old method of vertical dipping. In France and other parts of the Continent the use of the flat bath is very general, and French operators to whom we have spoken on the subject always emphatically prefer it to the vertical bath.

We have recently had opportunity of discussing the question with three or four photographers who, having adopted the use of the flat dish for convenience and economy in exciting very large plates, have come to the conclusion that the vertical bath is altogether a mistake, engendering many troubles, and possessing no advantages. As the claims made extend considerably beyond the mere question of convenience in manipulating, we will briefly enumerate the important advantages involved in the use of the flat dish for the negative bath.

In the first place, it is stated that the common trouble of streaks in the direction of the dip, or anything equivalent to it, is unknown in working with a flat bath. The most satisfactory explanation of the cause of these streaks attributes them to the repulsion effected by the ether escaping from the film, and running up the film in fine streams in their way to the surface of the solution. In the flat bath this cannot, of course, occur, as the film is in a horizontal position, and offering equal facility for the elimination of ether to the whole surface at once. A second important advantage is, that the bath keeps in much better condition. The large evaporating surface presented by the solution kept in a flat dish presents the best possible facility for the escape of the ether and alcohol, which, in the vertical bath, accumulate, and gradually produce much mischief. The plan is often economical, especially for those photographers who occasionally employ very large plates. The necessity for making a few gallons of nitrate solution to excite two or three or half a dozen plates of a size not required more than once in a month is a troublesome and costly business. In a flat dish a few ounces of solution will excite a plate, which, in a dipping bath, would require perhaps as many pints. There are, also, some other minor advantages. We do not know of any drawbacks worth consideration. We have heard it alleged that the dark room atmosphere becomes much more palpably charged with fumes of ether and alcohol when a flat bath is used, but this simply proves that these vapours have not been retained in the solution to its damage; from the atmosphere they may, of course, be easily removed by ventilation. Dust or scum, it is said, will more adhere to the film of a plate when lifted from a bath in which it has been laid in a horizontal position. But such dust or scum is easily seen on the surface of the solution in a dish, and also easily removed, and if the dish be kept covered, as it should be, the solution is not in greater danger of acquiring dust than that in a vertical bath. To a person unaccustomed to the manipulations, the use of the flat dish does not seem so perfectly easy as that of the vertical bath, but a little practice equalizes the manipulatory facilities of both.

Our intention, in these brief remarks, is simply to call attention to the advantages of the flat bath; hints for the mode of using it are scarcely necessary. Some operators prefer to lower the plate into the solution face downwards, allowing the edges to rest on some support. But this plan has several disadvantages: it is apt, if there be any minute trace of dust or scum on the surface of the solution, to cause it at once to adhere to the film; air-bubbles sometimes are formed, which are injurious if the film be downward, but of no importance whatever when the film is uppermost. The best plan is to use either a deep flat dish, or a flat bath with reservoir, and, tilting the solution to one end, place the plate, film uppermost, with one end just touching the solution; lower it into the empty portion of the dish with the hook of silver or other suitable substance; then allow the solution to flow in one steady wave over the dish, tilting and agitating the solution now and then, if necessary, to facilitate the escape of ether; when the sensitizing is complete—which, in a flat dish, is easily seen—the plate is easily removed by means of a hook, without the fingers coming into contact with the solution. Altogether this method possesses many claims upon attention, and is certainly less known amongst many photographers than it deserves to be.

PRINTING IN CARBON DESCRIBED IN TWO CHAPTERS.

BY W. T. BOVEY.

Chapter I.—Edwards' Modification of Swan's Process.

The nineteenth century, from its commencement, has witnessed the development of so many triumphs of mind over matter, that writers rack their ingenuity in vain attempts to compose a concentrated and telling sentence in which the exceptional peculiarities of the present century of invention and bold innovations might be suggestively described. "Age of progress," "era of intellect," "century of discovery," with many other threadbare phrases of a similar character, have done the duty of the hour. Yet occasions sometimes arise when the overwhelming vastness of the theme renders it a difficult task to convey in words the note of ponderous change embodied in the information. Under circumstances such as these, the narrator feels that the whole force of his subject is thrown into one word, when he speaks of revolution—a word which, happily, contains an elasticity of meaning so accommodating that the nature of the change indicated has only to be recognized to enable the mind to comprehend the magnitude of the transformation, or to be impressed with the absurdity of the pretension. For reasons which might easily be explained, it rarely happens, when revolutions are promised, that the word is not misapplied. The matter spoken of is so void of any breadth of importance that its value, which, if more modestly expressed, would entitle it to respect, is lost in the storm of contempt that follows disappointment.

It would prove an unnecessary waste of time to collect materials from any but the photographic world wherewith to prove a position. The field to which we are confined is, however, so rich in examples, that no scarcity need arise on account of boundary limitation, for I can state, with full confidence, that no branch of science can raise the cry of "wolf" more vigorously than can photography. A revolutionary art in itself! Its followers breathe the air of revolution, and repeated disappointments fail, in most instances, to quench the credulous spirits who fire up at a revolutionary cry. Instance: A new dry process is constructed from old materials. Shouts of "Revolution!" accompany the proclamation of the discovery. A new printing-frame is constructed, and straightway the printing rooms ring with news of coming revolution. A modified camera is expected to throw the photographic world into fits of ecstacy. In short, revolution is so often spoken of in connection with photographic discovery, that some few among the older followers of the art have cooled down to a dangerous point of scepticism, and are enabled to sleep the sleep of the innocent, even when the revolution announced threatens a toppling over of the institution from whence they draw their present means of subsistence.

'Twas in a happy state of partial somnolency, nearly akin to that above alluded to, that the writer of these lines was fast falling. He had lost sight of the carbon ghosts which had long haunted him. So hazy had his sense of vision become, that a "signal of danger" read "all right," and "revolution" was "all bosh." He has, however, been rudely aroused in a way which induces him to embrace the first person as a medium to convey particulars of the awakening, which will doubtless be read with interest by all who feel concerned respecting the future of photography. The enlightening shock was received in this wise. Having a little business matter to transact with Mr. E. Edwards, I waited on that gentleman at his place of business, which is situate in the same parish in which I live and labour. I knocked at the outer door, was admitted, and, for a space of at least three hours from the time of admittance, I moved in a whirl of accumulating admiration. Here I sink into a whisper to say, that afternoon, spent in an interesting inspection, has brought about my ears a legion of spirits of carbon, which haunt me by day and by night. In vain do

I plead conversion. In vain do I promise an early adaptation of at least one branch of the work. I am haunted still, and must continue to be so haunted until I have described the wonders of those processes which must be seen worked to be rightly comprehended. It must be understood that Mr. Edwards, in connection with a partner (Mr. Kidd), has organized an extensive establishment for the reproduction of paintings, old drawings, rare etchings, and scarce copies of engravings. The methods by which the prints are produced are of a twofold kind: first, by a process known as Edwards' modification of Swan's method; second, by an exceedingly ingenious method of mechanical printing, which is a most important improvement made and patented by Mr. Edwards on the continental modes of working. As the practical application of both the branches of carbon printing to which I have alluded are interesting throughout, I purpose describing each in detail, selecting first the subject of Swan's patent as modified and worked by Mr. Edwards under a licence from the Autotype Company.

In the preparation of his tissue Mr. Edwards employs, as a matter of choice, common brown glue, such as is used by cabinet-makers and joiners in their business. The requisite quantity of glue is first weighed out, placed in a stoneware pan, and over it is thrown a given measure of boiling water. The glue is kept constantly moving until it assumes a liquid form, when the pigment, sugar, and bichromate, are added in accordance with formula. When the whole of these substances are thoroughly incorporated by constant stirring, the fluid, which bears some resemblance to treacle, is carefully strained, and is then ready for conveyance to a department into which I must now introduce my reader.

Imagine a room of moderate dimensions, windows wide open, with air and daylight streaming undiluted in. A queer-looking machine, not unlike a guillotine, occupies the centre of the room and a huge roll of paper, such as paper-hangers use for lining purposes, is seen standing opposite the tail-end of the machine, whilst on a rack situate at one side of the room hang suspended sheets of tissue, which resembles—and, by the outsiders, is often mistaken for—patent leather. We must not, however, keep the attending spirits idle. Make way! And a young man pulls from the great roll some twenty feet of paper, which he separates from the fat bulk, and, with the assistance of a boy, proceeds to connect the paper with the rollers of a machine, which is in itself no ordinary curiosity, consisting, as it does, of a patent portable mangle, most curiously transposed. The rollers are now separate, and attached horizontally to a pair of stout uprights, some ten feet in height. Each roller revolves in its position freely; the one is placed within the top of the perpendicular supports, the other is placed in the same line, about three feet from the floor. Beneath the bottom roller an adjustable stand is constructed, which is moved upward or downward by means of a screw, which in the mangle was used to regulate the pressure. The paper to be coated with the pigmented gelatine is passed around the rollers, against which the inner surface of the paper is made to press somewhat firmly. The two ends are then brought together, and united with glue. An endless band is thus formed, which is capable of travelling around the machine. To coat this band on its outer surface with pigmented gelatine, they proceed thus: A narrow zinc trough, of about three-quart capacity, is partially filled with the strained mixture of pigment (chromate salt and glue), and placed on its fitting support, which moves with each turn of the adjusting screw. A few turns of the screw raises the trough sufficiently to cause the edges of the paper, which overlaps the ends of the roller, to be immersed about an inch below the surface of the pigmented mixture. By the turning of a handle, which once moved the mangle, the endless band is set slowly in motion, and, as each part of the paper is immersed in the trough, it receives a share of the gelatine. When the band of paper has made a complete revolution around the rollers, the trough that contains the fluid is quickly lowered beyond reach of the paper, which is kept slowly moving around the machine until the gelatine is well "set," when the paper is removed from the rollers, and placed, suspended, in a cabinet of suitable form and arrangement, where it remains until required for use the next day. Not the least of the curious things connected with the coating business is the fact of an extremely sensitive material being applied to the paper in broad and unshielded daylight; the mystery, however, ceases when we are made aware of the paradoxical fact that a mixture of gelatine and chromic acid is *not* acted on by light whilst in a wet condition.

Moving on to inspect the changing and filling department, we observe a young man busily employed in removing paper from the frames, and replenishing the same with other sheets of prepared material. Here we also perceive an important deviation from a rule laid down by Mr. Swan, which advocates the use of French chalk, which is to be applied to the face of the negative. Mr. Edwards' modification in this direction consists of an application of the chalk to the surface of the paper, thus removing what in Mr. Swan's practice must have proved a possible source of injury to the negative.* Returning to the immediate subject in hand, I proceed to observe that in each frame is placed a strip of paper on which is written directions for exposure and tint of transfer ground required for prints struck off from the associate negative. The directions for exposure are brief, simple, and comprehensive, and consist of numbers which we shall by-and-bye perceive correspond with duplicate numbers attached to the actinometer. As each exposed sheet is removed from the frame, the assistant writes down on the back of the paper directions for transfer, which he copies from the strip within the printing-frame. Each frame, when replenished with fresh supply of tissue, is passed on to the glass room, whither we must accompany if we would watch printing operations direct.

Most assuredly the printers in carbon have an easy time of it. None of those tick, tack, rumbling, tumbling noises are to be heard, as in places where printing in silver is going on. Indeed, the printing proper seems a matter of no concern to the printer, whose eyes rarely find employment in any direction save that where stand the trusty actinometers, which consist of strips of glass marked with bands of collodion stained in yellow tints of progressive depth, beginning with a light canary, and ending in deep orange. On each tint is marked in black a number, over which is placed a strip of paper which has been sensitized with a bichromate solution. The working principle is the simplest matter imaginable. The frames are classified, which brings the negatives of equal intensity grouped together. To set the matter clearly before the reader, I will suppose a group of frames to be marked with a number six. The assistant who looks after that lot of negatives has to keep his attention fixed on a duplicate number marked on the actinometer. As he examines the sensitive paper, from time to time, he perceives that at each examination No. 6 has become more clearly defined, whilst numbers 1, 2, 3, 4, and 5 are gradually getting fainter. As soon as No. 6 is conceived to have reached the maximum of intensity, all the frames marked with that number are moved on to the changing room.

Proceeding onwards to the developing department, we are directly struck with the simplicity of the arrangements. In front of a range of pigeon-holes stands a young man who is engaged in placing the exposed tissue in contact with a surface which is meant to be a permanent support, and ground for the picture. This supporting medium consists of a paper which has been previously coated with a mixture of gelatine, chrome alum, and water. The operator first damps a sheet of the transfer paper, and attaches it to the surface of the exposed tissue; perfect contact is produced by rubbing with a squeegee (a most useful tool, of which more anon), and the prints stand over for development. The prints are developed by immersion in water heated by gas which issues in jets innumerable from pipes which are fixed beneath a range of metal trays in which the prints are developed. Attached to two papers, the prints are submitted to tray No. 1, water standing at about 96° or 100° Fah. A few seconds or minutes elapse, and the temporary support is peeled clean from the tissue, which, on its permanent base, is submitted to trays Nos. 2 and 3 for a further and final development. A broad and flat camel-hair brush used from time to time materially assists the process of development on parts of the picture which need an application of gentle pushing. Finally, the developed prints are consigned to other trays, where, in water at a lower temperature, the unreduced chromate salt is soaked away from the picture.

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* There is a slight misconception here. Mr. Swan always applied the powdered steatite to the paper, as our contributor will ascertain by reference to page 67 of our work on "Pigment Printing," where several reasons are given for applying it to the paper.—Ed.

From the fact of Mr. Edwards' process being a single transfer one, it will be noticed that, except the negative is reversed, the print must be falsely placed. Mr. Edwards again seems equal to the occasion. He uses, where possible, transferred negatives, which are produced as follows:—In lieu of varnish, the negatives are coated with an india-rubber solution (I apprehend that gum or albumen would answer equally well). When dried, the plate is placed on a level stand, and coated with a full-bodied collodion to which a liberal dose of castor oil has been added. The negative is allowed to stand several hours, until the collodion is full dry, when a penknife passed around the edges of the plate enables the film to strip clean from the glass, which film is at once placed under pressure to prevent its curling at the sides and ends.

Although it has occupied some time and many words to explain even briefly the operations I have described, yet I can positively assert that printing in carbon, as witnessed at the establishment of Mr. Edwards, is infinitely more simple than printing in silver; and I have no hesitation in expressing my belief that an intelligent man would be able to go successfully through the whole operations after a day or two of trial. Easy as the operations unquestionably are, however, we must qualify when judging the actual capabilities of the process. With the best of negatives it cannot produce a print that can vie in richness and vigour with a good silver print, and with a bad negative the carbon work is nowhere. For reproductions the pigment process can equal silver printing, but for portraiture and landscapes taken direct from nature, silver must still wear the palm. There is, however, a bright future for carbon printing, more especially in the direction of printing—to which I hope to turn next week—a direction which is destined, at no distant date, to revolutionize the printing done by photography.

AMERICAN CORRESPONDENCE.

Another Hail Storm—What the Hail has Done for Photography—Photolithography in the Patent Office—Improvement in Colouring Photographs — The Umbrella Tent—Improvement in Plate Holders—Standard Sizes.

Another Hail Storm.—During the past few weeks different parts of our country have been visited by very severe hail storms, and I have already given you an account of the one that fell upon our city. Last week Massachusetts was awakened by a similar fall of immense hail, many measuring as high as seven inches in circumference, and the average about three and a-half inches. Of course, anything like a skylight suffered, and, therefore, the poor photographers came in for their full loss by breakage, and, worse than all, by the drenching torrents of rain that followed. Many places were flooded, and much damage to furniture, &c., followed. Certain portions of the South have had similar visitations. How many more such we are to have during the summer is a question for the meteorologists to decide. Some of the formations of hail were very curious, resembling conglomerate masses or chunks of ice, while some were very beautiful, resembling rosettes, flattened globes with cogged edges, &c. Beautiful as they were, we hope to see no more of them for some time to come.

What the Hail has Done for Photography.—The hail has not been without its good effects, however. Several photographers who have for a long series of years been working in the same old rut, under the same old, dirty, and ill-constructed glass houses, with that sprightly, persistent little genus, "Improvement," constantly knocking at their doors for admission, have reconstructed their studios upon modern principles since the hail, and, much to their delight, are making better work now than they ever did before.

Another innovation resulting from the hail may also be looked upon as a good result, and, perhaps, prove useful. Some of our Philadelphia photographers, in order to protect themselves against the ravages of another such a storm, proposed to construct outside blinds over their skylights, another object being also to secure certain effects of light which would be desirable. The plan was tried by one of them, worked well, and is being followed by others; meanwhile, a correspondent in the West, Mr. L. M. Whitney, Batavia, Ills., sends me drawings and a description of outside blinds he has used for some time. He has the blinds or slabs made of coarse canvas upon wooden frames, so arranged that by means of pulleys inside the studio he can open or close them at pleasure, giving them at any angle, as he can remove them entirely, rolling them into a box at one end of the skylight provided for the purpose. The blinds are made into three sections, each one working independently of the other. The advantages of such a contrivance are many: 1st. Protection from the hail; 2nd. In summer, when the studio is not in use, the blinds may be closed, and thus keep the studio cool, for by means of them the sun may be shut out entirely; and 3d. Some very fine effects may be secured by their use in lighting the model.

Instead of allowing superfluous light to come into the room, and then driving it where it is wanted, the amount of light that enters the room may be nicely regulated, as well as driven in the right direction. Of course, the idea is an experimental one as yet, so far as applied to lighting the subject, but I expect to see it become practicable and useful. If it does, we shall not regret that some of our old photographers were hailed on their way and saved from a worse misfortune than a broken skylight.

Photolithography in the Patent Office.—I wrote you a few months ago that the Commissioners of Patents had ordered that all patent specifications be accompanied, if possible, by drawings of the article for which a patent was desired, and when the patent was granted copies of all such drawings would be made by means of photography. I have sent you several specimens, made in accordance with that order, on plain salted paper, and the plan seems to have worked very well. Now, however, a new order comes, stating that hereafter the drawings will be reproduced by means of photolithography, and certain regulations are given for the guidance of draughtsmen in order that the drawings may be of colour and style best suited to their reproduction in the manner stated, as follows:—

The paper must be thin Bristol board, or thick drawing paper, with a smooth or calendered surface.

The outlines must be executed in deep black lines, to give distinctness to the print. Pale, ashy tints must be dispensed with.

In shading, lines of black ink should be used, and such lines should be distinct and sharp, and not crowded. Brush-shadings or shadows will not be permitted.

All colours except black must be avoided in the drawing, lettering, and signatures; violet and purple inks must not be used.

No agent's, attorney's, or other stamp must be placed, in whole or in part, within the margin.

The sheet must not be larger than ten inches by fifteen, that being the size of the patent. If more illustrations are needed, several sheets must be used.

Applicants are advised to employ competent artists to make the drawings, which will be returned if not executed in strict conformity with these rules, or if injured by folding.

I am sorry to say that in some instances the necessity of making the drawings to suit photography often makes them less satisfactory; but, for the sake of seeing photography pushed up, we gladly submit. The photo-lithographic process used will, doubtless, be Rehn's, which I described to you a short time ago, Mr. Rehn being the photographer at the Patent Office.

Improvement in Colouring Photographs.—A patent has just been issued in the United States to one Robert Amber, of San Francisco, for an "improvement in colouring photographs." What sort of a conglomeration photographs resemble when coloured by his method I have not as yet been able to witness; but here is his process. He says, in his specifications: "It consists in a mode by which it is rendered possible to employ upon the same picture both water and oil colours, in order to produce a fine effect and to give a rich appearance to the picture. To accomplish this object, I take an ordinary photograph on albumen paper, and first use water colours for painting and giving tone and expression to the face and other portions to which such colour is adapted. I then float over the entire surface of the card a thin film of collodion, which is allowed to become dry; after which, I either float a coat of spirit varnish over the surface, or apply a coating of oil varnish with a brush in the usual manner, the film of collodion preventing the varnish from being absorbed by the paper. This last coating not only protects the photograph and the water colours, but prepares it for finishing the remaining portions of the picture in oil colours, with either plain, ornamented, or landscape backgrounds; and retouching with oil colour, if desired, the face, drapery, or any other part in which its application can be made with better effects than with water colours. The advantage of thus combining the water colours in one part and oil colours in another part of the picture, is to produce a brilliancy, softness, and clearness of outline which cannot be obtained in photographs as ordinarily painted."

The Umbrella Tent.—A correspondent has sent me an idea for a developing tent which seems to possess the advantages of being very good, and, at the same time, easily and cheaply constructed. Proceed as follows:—Drive a stake into the ground until it stands about three feet high; now take a common umbrella, tie the handle firmly to the stake, and then over the whole throw a double thickness of black and yellow cloth, which makes the tent. Of course the cloth should be cut and made into proper shape: a slit for the entrance, a hole at the top for the point of the umbrella stick, and a square cut out of the black cloth, which leaves a yellow square for the window. The bottom edge of the cloth should lie upon the ground, and stones be placed upon it to keep it from blowing about—or it may be held down with wooden tent pins. The manipulations have to be performed on the ground, but that is no serious drawback.

Improvement in Plate-Holders.—Another useful improvement has recently received the protection of the Patent Office here, which consists in placing bibulous paper or other absorbent material at the bottom and sides of the dark slide, held there by means of silver springs, in order to collect the drippings of the plates. I observe in the English camera-boxes that come to this country that the plate rests in the shield upon silver wires. With us an earthen or glass "corner" is used, and very often no gutter is supplied to catch the drippings; therefore, after each exposure, the shield must be wiped out. This "absorbent" plan will be very useful, then; and, by means of the springs, an old one may be quickly removed and replaced by a fresh one. Many failures are caused by dirty shields, and let us hope that this plan will have a tendency to prevent them in future.

Standard Sizes.—I am glad to see Dr. Liesegang agitating the subject of standard sizes for photographs. What a happy day it will be when we have standard sizes: uniformity of flanges for our lenses, uniformity of weights and measures, and so on. Ever since the days of the Daguerreotype the small sizes of glass, ferrotype plates, porcelain glass, and, consequently, cases, frames, and camera-boxes have been very regular in this country, and seem very convenient—so much so, that it would be a long time before a change could be made. Our sizes are as follows:—

Size.	Inches.
$\frac{1}{16}$	$1\frac{3}{8} \times 1\frac{5}{8}$
$\frac{1}{9}$	$2 \times 2\frac{1}{2}$
$\frac{1}{6}$	$2\frac{3}{4} \times 3\frac{1}{4}$
$\frac{1}{4}$	$3\frac{1}{4} \times 4\frac{1}{4}$
$\frac{1}{2}$	$4\frac{1}{4} \times 5\frac{1}{2}$
$\frac{1}{1}$ or $\frac{4}{4}$	$6\frac{1}{2} \times 8\frac{1}{2}$
Extra $\frac{1}{1}$	8×10
Double $\frac{1}{1}$	11×14

We also use 5×8 for two cards on one plate, and 4×7, 4×8, and 5×8 for stereoscopic work. Above all these should be a standard for the latter class of work, and it seems to me 5×8 has the most advantages. If the Old World says so, we are willing to adopt earnestly any standard.—Truly yours, Edward L. Wilson.

Philadelphia, July 1st, 1870.

PERMANENCY IN SILVER PRINTS.

Mr. H. T. Anthony, reprinting in his *Bulletin* a recent letter by Mr. Bovey which appeared in our pages, adds the following comments:—

"There certainly was a time when the working of albuminized paper was not well understood; when there were a great many poor pictures made, and a great many turned out which were *bound* to fade. But as the proper mode of working has finally become generally employed, the work now produced is a great deal better, and, by long odds, more durable.

"The generally supposed cause of fading is, that a small quantity of hyposulphite of soda is left on the print when dried, owing to the removal of the print from the washing-tank before the complete elimination of that salt. If this be the only cause of the fading of prints upon albuminized paper, we now have it in our power to remove that cause; and then where, we should like to know, does the necessity of upsetting all our old arrangements, and the introduction of entirely new processes, come in? We do not, in the present remarks, wish to be understood as objecting to progress, or to the introduction of more perfect work; but our desire is to counteract, so far as possible, the fear which has gained, and is constantly gaining ground, owing principally to the sensational articles of persons interested in the carbon and other processes, that all the money they invest in photographs, as made at present, is no better than thrown away, as they assert that all photographs are, sooner or later, sure to fade out of sight and become worthless.

This we cannot, from our own experience, admit; nor do we believe that properly-made photographs are, to any great extent, when properly cared for, more liable to perish than other prints. They certainly possess the quality of greater brilliancy, and of great ease of production. What, then, are the conditions to be observed for making a durable print? They are as follows:—

First.—The print must be washed entirely free from hyposulphite of soda. This can be done now very readily by using Ormsbee's method of washing; and the fact that the prints are thoroughly washed can be ascertained by the iodine and starch test.

Second.—The print, after being mounted, must be protected from atmospheric action. This can be accomplished by using the compound of wax now prepared for that purpose, or by using Anthony's Enameline.

Third.—Manufacturers of cardboard must be required to furnish an article free from hyposulphite of soda.

The various mechanical and carbon processes are attended with so many difficulties in practice, that we think there is very little danger of their supplanting the silver printing process for the ordinary purposes of photography. We have reason to believe that even the process of Albert of Munich, with reference to which so much has been asserted, and from which so much has been expected, will fall far short of its promise.

All that we can say, in conclusion, is, that if our photographers make it a point to study the best mode of making durable prints, and do their work conscientiously and thoroughly, test everything, leave nothing to be guessed at, and work as economically as possible, they will not only obtain their reward in increased profit and greater public estimation, but they will place in the far future the possibility of the substitution of the mechanical or carbon processes for those now generally employed.

MAGNESIUM AND ELECTRIC LIGHTS AS APPLIED TO PHOTO-MICROGRAPHY.

BY BREVET LIEUTENANT-COLONEL J. J. WOODWARD,

Assistant Surgeon, U. S. Army.*

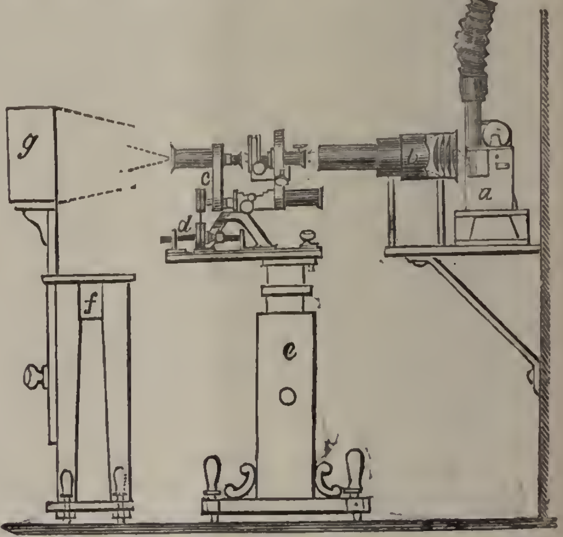
To enable the observer to focus the microscope while sitting at a distance from it at the sensitive plate, the following contrivance is employed. On the table which supports the microscope (*e*) two brass shoulders, each two inches high, are screwed. Through these runs an iron rod nine inches long, on which slips a brass pulley (*d*) which can be clamped at any point. A cord connects this pulley with the wheel of the fine adjustment of the microscope, which is grooved for the purpose. It is evident that whenever this iron rod is turned, the pulley turning with it will move the fine adjustment of the microscope. To effect this, the iron rod terminates in a square extremity, so that a joint of an ordinary fishing rod, to which a brass ferrule, shaped like a watch key, has been rivetted, enables the operator to focus the microscope at any ordinary distance. When greater distances are required two joints of the rod may may be used. The rod, being graduated into feet and inches, enables the operator to record the distance employed for each picture. When the focussing is completed, the rod is removed. I have found this simple and cheap arrangement superior in delicacy and convenience to any of the more costly arrangements I have heretofore tried.

The chemical processes employed in taking the negatives do not differ in any respect from those used in ordinary photographic work, and I have found that by employing a practical photographer, allowing him to manage the dark room, and confining my whole attention to the optical arrangements, I not only get many times more pictures in a day, but they are much better than can be produced by any one who attempts to do the photographic work, as well as manage the microscope, himself.

I find myself thus enabled to sit down quietly of an evening, and during four hours' work to produce from twelve to thirty negatives or more, in accordance with the difficulty of the subjects and my previous knowledge of them. Any microscopist who is willing to go to the moderate expense of battery and lamp, and to add two or three specially constructed objectives to his microscopical apparatus, can, by employing a photographer one or two evenings in the month, reproduce all the more interesting of his month's observations with a degree of economy and beauty not to be obtained by any other means; and if he follows the method I have above described, the character of his results will be conditioned by his skill as a microscopist rather than by any other circumstance. As to the time of exposure required for taking negatives with the electric light, I find that for one thousand diameters about thirty seconds are necessary for that class of objects (such as Angulatum, the Nobert's plate, &c.), for which it is not necessary to employ a ground glass plate to prevent interference phenomena. In photographing the soft tissues and many other objects, it is necessary to insert a piece of ground glass below the achromatic condenser, to escape the interference phenomena which else occur, precisely as must be done in photographing the same objects by sunlight. This increases the time of exposure to about three minutes for one thousand diameters. Other powers require proportional times.

2. The magnesium light affords a beautiful source of illumination comparable to white cloud illumination of the best character, or to the light of the sun after it has passed through a sheet of ground glass. Without the use of ground glass, this light serves admirably for the production of photographs of the soft tissues with any power under a thousand diameters. The light being composed of a mixed pencil, with rays passing in all directions, there are no interference phenomena, but, for the same reason, on the Nobert's plate and many test objects, the results are inferior to those produced by the sun or by the electric light; with powers much higher than a thousand diameters, however, the time of exposure becomes inconveniently long.

The process employed by me in the production of negatives with the magnesium light is essentially the same as I have above described for the electric light; simply the magnesium lamp is substituted for the electric, and the condenser of an ordinary oxycalcium magic lantern is made to concentrate the light on the achromatic condenser of the microscope. The cut represents the arrangement. The magnesium lamp (*a*) stands on a shelf fastened against the wall. The condenser (*b*) concentrates the light on the lower lens of the achromatic condenser of the microscope (*c*), which stands on a table (*e*) supported on three levelling screws. The image received on the plate holder (*g*), which is supported an a table (*f*), is photographed precisely as in the case of the electric light as above described. The same focussing apparatus (*d*) is employed, and the ammonio-sulphate cell should invariably be inserted, but the ground glass is never necessary. I find that it requires exposures of about three minutes to produce negatives of tissue preparations with five hundred diameters. Other powers require proportionate exposures.



The magnesium lamp used by me for this purpose was the two-ribbon lamp of the American Magnesium Company (No. 2, Liberty Square, Boston, Mass.), sold by that company for magic lantern purposes, price $50. The ribbon weighs about fifty-two centigrammes per metre, and is sold at $2.50 per ounce. Two ounces will, with care, answer for three or four hours' constant work, and ought to produce from twelve to thirty negatives in accordance with the difficulties of the subject to be represented. The fumes of magnesia resulting from the combustion are carried into a chimney five feet long, made of a spiral wire covered with muslin, which terminates in a muslin bag in which the oxide condenses, while the draft goes on through the interstices of the muslin. The chimney and bag are furnished by the Company for $2.50.

In commenting on the above processes it may be remarked, that for the anatomist and physiological investigator. the magnesium lamp affords a satisfactory and sufficient source of light for the photography of normal and pathological tissue preparations. The same end can be equally well or even better attained with the electric lamp, with which also the most difficult test objects can be satisfactorily reproduced. Where economy of apparatus is the object, the magnesium lamp will be preferred by ordinary workers; but where much work is to be done, the high price of the magnesium ribbon more than counterbalances the cheapness of the apparatus, and the electric light becomes the most economical. For the information of any practical photographers who may be employed for work of this character, I may add the following remarks on the chemical process employed in the production of the negatives from which the appended prints were made. An ammonium and potassium portrait collodion, rich in alcohol, was employed, developed with the ordinary solution of iron, and fixed with cyanide of potassium. Where it was necessary to intensify, the hydro-sulphuret of ammonium was resorted to.

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* Continued from p. 322.

In illustration of the character of these sources of illumination as compared with each other and with sunlight, I herewith append three prints from negatives taken with a Wales' inch and a-half, from the sixth square of a Mollier's diatom type-plate, specially prepared for the Army Medical Museum by that skilful microscopist. The first, from negative 79 (new series), was taken by sunlight, with 40 diameters; in the second, from negative 123 (new series), the magnesium light was used, and, everything else remaining the same, the distance was increased so as to give 48 diameters; in the third, negative 158 (new series), the electric lamp was employed, and, everything else still remaining unaltered, the distance was increased so as to give 66 diameters. It will be understood at once, that on account of the increase of distance, the second picture would have been slightly less sharp than the first, and the third than the second, had precisely the same source of light been employed; nevertheless, in spite of this disadvantage, to which they were purposely exposed, the magnesium and electric pictures are far superior to that taken by sunlight, and of the two the electric is much the best. It is especially to be observed, that in the electric picture the contrast obtained is so great that the objects appear clearly defined on an almost perfectly white ground, which is never the case with the photo-micrographs taken with the sun as a source of illumination.

As a further illustration of the capabilities of the magnesium and electric lights, I add a few photographs taken by each.

By the Magnesium Light.

Arachnoidiscus Ehrenbergii. Magnified 400 diameters by Wales' 1-8th. Negative 114 (new series).

Small vein and capillaries, from the muscular coat of the urinary bladder of the frog. Magnified 400 diameters by Wales' 1-8th. Negative 103 (new series). This negative is taken from preparation No. 3378, Microscopical Series, in which the bladder was injected with a half per cent. solution of nitrate of silver, and subsequently stained with carmine dissolved in borax. The epithelium was then brushed off with a camel's-hair pencil, and the preparation transferred through absolute alcohol to Canada balsam; the photograph reproduces everything but the colour.

By the Electric Light.

Pleurostaurum Acutum. Magnified 340 diameters by Wales' 1-8th. Negative 109 (new series).

Triceratium Favus. Magnified 210 diameters by Wales' 1-8th. Negative 110 (new series).

Navicula Spima. Magnified 840 diameters by Powell and Lealand's immersion 1-16th. Negative 112 (new series).

Human red blood corpuscles. Magnified 1,000 diameters by Powell and Lealand's immersion 1-16th. Negative 145 (new series)

Section of an epithelial cancer of the larynx. Magnified 400 diameters by Wales' 1-8th. Negative 162 (new series). This negative is taken from preparation No. 2277, Microscopical Section. The print shows the nuclei and cells of the growth with great distinctness.

Grammatophora Marina. Magnified 2,500 diameters by Powell and Lealand's immersion 1-16th. Negative 151 (new series).

I have the honour to be, General, Very respectfully, your obedient servant,

J. J. WOODWARD,

Assistant-Surgeon and Brevet Lieutenant-Colonel, U.S.A., in charge of the Record and Pension Division, and of the Medical, Microscopical, and Comparative Anatomy Sections of the Army Medical Museum.

Note.—Since the foregoing essay was printed I have obtained a number of excellent pictures, with power ranging from 400 to 1,000 diameters, by using the ordinary oxycalcium light as the source of illumination. Some of these pictures were not inferior to the best work I have done with the magnesium light, the process employed was the same, and the times of exposure did not materially differ. I will contribute full details in a short time.

J. J. WOODWARD.

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TRANSFERRING NEGATIVES FROM ONE GLASS TO ANOTHER, ETC.

An English photographer in America, writing the *Photographic Bulletin* on remedying certain defects in negatives, referring to an article on "peeling of the film," says:—

"It reminded me of our troubles about fifteen years ago. I found that coating the glass with gum, gelatine, or albumen, would entirely cure the defect, at the same time obviating the necessity of carefully cleaning your negative plates. This went on well for a year or more. Mr. Mayall, who, among others, I had given the above information to, came one fine May morning, and told me his negatives were getting spotty. Some fine stereo negatives of the residence of Sir Thomas Moore—the author of Utopia—had served me the same trick. After a little consideration I came to the conclusion that salted paper had a liking for moisture, which is absorbed during the long damp days; the gum or albumen or gelatine has also a great affinity for silver salts, and, in spite of a fine varnish interposing, would creep through and stain and spoil the negative. These negatives were so valuable I could not afford to lose them. I dissolved the varnish, and applied Archer's negative transferring varnish, and placed them in water. A few minutes afterwards the negatives were floating off the glass on the water. Turning it over and putting a clean glass under and lifting it up, as the water runs off, you get perfect contact of the film, and can wash away the stained gelatine with hot water, and restore the negative to a new glass. The same process can be used with a cracked plate. After this, the question still remains to be answered how to prevent the film from peeling, as well as the causes of the trouble. These are unclean glasses, glasses that have been previously used for negatives, collodion that is too tenacious, condensation of moisture on the plate; the latter often happens in tent work (our tents are specially made to prevent this). Now for the cure.

"Use new glasses. Have the edges ground, if it be ever so little; use collodion that has as large a proportion of strong alcohol as it will take and flow freely. And, to conclude, as the itinerant showman said, 'Now my little dears, blow your noses, and don't breathe upon the glasses—and you shall see vot you shall see.'

"P.S.—The chief thing in the preservation of negatives I omitted (it was not in the text): wash them thoroughly and dry them, and apply good varnish while the negative is warm."

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FOCUS OF CONDENSING LENSES.

A correspondent of Anthony's *Bulletin* writes as follows:—

"Of all the works pertaining to photography that have been issued, I do not remember having seen one that has given any rule by which the focus of a condensing lens can be computed. In Lea's Manual, page 71, there is a method given, but it left me in the dark entirely; and thinking there might be some one to whom a simple rule for the above would be useful, I submit the following. This refers only to the plano-convex lenses, generally sold for condensers:—

"To the square of half the diameter add the square of the thickness of the glass, divide by the thickness of the glass, and from this product deduct $\frac{2}{3}$ the thickness for refraction. This gives us as follows:

let f = focus,
y = half the diameter,
t = thickness.

Then we have

$$f = \frac{y^2 + t^2}{t} - \frac{2\,t}{3}$$

"For example, suppose you have a lens 14 inches in diameter and 3 inches thick.

"Half the diameter is 7, the square of this is 49; add to it the square of the thickness, $3^2 = 9$, making 58.

"Divide this by 3, the thickness, and you have $19\frac{1}{3}$; deduct $\frac{2}{3}$, the thickness, and you have $17\frac{1}{3}$ inches focus, which will be found practically correct. This rule applies to all ordinary solar camera condensing lenses, the density or refractory power of the glass making very slight difference.

"A lens was sent me not long since of 16 inches diameter, purporting to be $21\frac{1}{2}$ inches focus. Judging from the looks of the lens that a mistake had been made, by this rule I figured it at $30\frac{56}{100}$ inches focus. I then placed the lens in the sun, and measured the length of focus with a stick, and found it $30\frac{1}{4}$ inches. I did not measure very closely, as the stick commenced to burn, and I thought I had it near enough to prove the above rule, and trusted to the figures rather than the stick."

A PHOTOGRAPHER'S RECEPTION ROOM IN AMERICA.

A humorous sketch in our Philadelphia contemporary gives some account of the troubles and anxieties of portraiture from the sitter's point of view. A description of the contents of the waiting room when the sitter, whose troubles are recorded, visited the studio, has some graphic writing. We select the description of a Yankee farmer's wife who is waiting. Nature, not unassisted by art, had contrived to make her a model of anything but grace and beauty. She is about to victimize the photographer for the fifth re-sit, and remarks aloud:—

"'Pears like the hull town's gone crazy to have their pictur took. I told Jonathan this morning, when he was hitching up—ses I, 'Jonathan, if them bandy legs a hizzen don't fly round and do the job this hitch, he'll never git no more patronyge of mine—you can just salt that down."

This little speech she delivered in a general way for the ear of the public; but the ear of the public being dull and unsympathizing, and I in close proximity, she turned her back upon it, and favoured me with her confidence, unbosoming herself at great length:

"You see, this is five times we've druv over—near on to ten mile; because, you know, I've got a inward Trieocephalus set up that may end my life any minute."

"Ses Jonathan to me, 'Betsy, you'r the choice of me youth, the pride of me heart; if it costs our red heifer, we'll have your pictur.' He was allus orful attached to me. Wal, the fust time the pictur man done putty well, was as perlite as a beggin committee, sot me several different ways to git the best pints. I haint got the stiddiest nerves in the world, and never could bear a man fussin over me, so what with my squirmin and his fussin it took amost all day. I ses to Jonathan, driving home, 'I guess I learned him one thing, and that air was, I'm virtuous.'"

At this point she seemed exhausted, and opened her lunch basket, which gave forth some huge doughnuts she had tucked in beside her best cap, with which she proceeded to regale herself, taking the story of her trials along with the eating.

"You see, we had something of a tussel about the pay—he wanted it right down; but I never pays no man till I git the value received. I got that lesson dealing with tin peddlers. He saw I was firm as a hitching post, and finally gin in."

"Wal, we waited and waited, and Johathan, he druv over and over, and piled up them air stairs, and got a crick in his back, and at last they wus all struck off. At fust we thought um pretty good, but the neighbors, they said how I wasn't fetched out enough; and my daughter Tilda Jane, she thought I orter been took standing. Wal, nobody thought um quite natural, so I told Jonathan I'd set again."

The last doughnut was eaten, and she sat meditatively, economically picking up the crumbs from her alpaca lap, when, seeing the interest I manifested, went on.

"Jonathan, he's been poorly all winter: fust he had the shingles, then he had a wasp nest; so, what with them and the crick, aint fit for nothin, he says, but tied up to me. The next two times we come they said they was too bizzy to look at us—got short and cranky; then 'twas too dark; but we ambushed um early to day. I made up my mind to see it out, if it takes till pitch dark."

The poor woman's fervor reached a crisis, and, in fetching an extra breath, she drew a crumb into her windpipe, which so choked and strangled her as to cause her waterfall, that had dangled precariously for some time by one pin, to plump on the floor. A squint-eyed boy restored it with comical grimaces, assisting to adjust it cornerwise over the left ear. At this denuding catastrophe, he had slipped out from a half dozen of his compeers, who, to beguile time, were hovering over specimens, whistling, and posing legs—tall, overgrown, noisy chaps, just entering the estate of jewellery and neckties—conscious looking juveniles, who had it on their minds to look in the mirror directly, and, when they did, drew on such long ghostly expressions, one wondered they had courage to face them. But they stood it out, each hitching at his already visible linen, betaking himself complacently thereafter to peanuts; sowing recklessly the new bright carpet with the débris, which, together with seed-cake and crackers scattered by hungry infants tearing about, gave the place an easy-going air

MODES OF INTENSIFYING.

At the recent convention of the American National Photographic Association, some interesting technical discussion took place. Some examples of failure having been introduced by Mr. Wilson, who remarked, in reference to an over-intensified negative, that over-intensification was a common sin amongst photographers, the following discussion arose:—

Mr. Benecke, of St. Louis: "I have found the best intensifier to be bichloride of mercury, very much diluted. I prefer not to intensify at all, but sometimes I think it is necessary, and I have found that to be the best."

Mr. Wilos, of Fremont: "I would like to have as many photographers as are here who can work right along without intensifying to raise their hands." (Several hands were here raised.) "I have frequently met photographers who don't consider redeveloping, using a little silver, as necessary, but I wish to know how many can work right along without redeveloping?"

Mr. Eliot, of Indianapolis: "I wish to ask the gentleman from St. Louis, when he intensifies with a solution of bichloride of mercury, whether he varnishes his pictures with gum, and whether the intensity increases after varnishing?"

Mr. Beneeke, of St. Louis: "I generally use a weak solution of gum placed upon a wet plate. I find the tendency is to lessen the intensity."

A voice: "How often does it peel off?"

Mr. Benecko: "Not so often as when it is not done."

A voice: "What proportion of mercury do you use?"

Mr. Benecko: "I find the weaker the solution the better. Of course, you have to have some in your water."

Mr. Wiles, of Fremont: "I have had some little experience in times gone by in the use of bichloride of mercury as an intensifier. Although I will not say that I altogether approve of it as an intensifier. yet it is necessary that a negative should be dried before intensified; then it is necessary that the bichloride of mercury should be very weak. A saturated solution plain water will take up but a very small portion of bichlo- de of mercury. Take about half an ounce of that in four or ve ounces of water, throw a little water over the surface of e film, then throw the bichloride over it until you see it turn very light colour—the lighter the better. After that wash it, nd flow it with a one-ounce solution of iodide of mercury. his bichloride of mercury solution penetrates into the film ter it is coloured. It is all on one side of the plate; if you rn the negative over there are no signs of penetration, yet, you look at it through the light, it is of a greenish-yellow. y that means you will be enabled to obtain a very soft, mellow cture. I have a landscape stereoscopic negative from which struck off over a thousand copies, and I am now enabled to rnish as soft a picture as when it was first intensified. In tensifying, where the mercury goes through the film, you are t to obtain a yellow negative, which will change into a light. he object is to have it penetrate as little through the film as ssible. Keep it of a greenish colour. The object of drying e plate before it is intensified is for that purpose."

By Mr. Desbaum: "I used bichloride of mercury for a good any years, and it made my picture look as though it was vered with milk. I know it was the mercury that did it, and lo not keep it in the house now."

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FERN-LEAF MARKS ON NEGATIVES.—DOCTORING BATHS, ETC.

HE following technical discussion at the meeting of the merican National Photographic Association at Cleveland condense from the report of our Philadelphia contem- rary.

Mr. Spencer, of Hudson, Mich.: "I want to ask a question out a difficulty that has troubled me perhaps more than any her one; and that is what, I believe, Professor Towler calls e 'fern leaf.' I call it infernal leaf; it shows itself th me on the right hand end of the double negative. The st picture to the right will be a perfect one, and the next one ll be spoiled. I have spoken of the difficulty to several older tists than myself, and the conjectures seem to fall in with my perience, at least, of what the difficulty is. Some say more id. I have used acid until the developer was half acid ughter), and that didn't remove the difficulty."

A voice: "I would ask Mr. Spencer if he ever tried alcohol en it operated in that way?"

Mr. Spencer: "I have."

Same voice: "Did it give relief?"

Mr. Spencer: "It did in that, but created a great many worse fects."

Mr. Youngman remarked that he thought the difficulty arose m the uneven drying of the collodion, and illustrated the nner in which the plate should be held to avoid the diffi- ty.

Mr. Colo: "I think if the gentleman would boil down his th and get his alcohol out, he would never be troubled in at way."

A voice: "That is so."

Mr. Spencer: "I have had the same trouble with a new th."

Mr. Bardwell, of Detroit: "I will not tell how to avoid it, but ill tell you how to cause it, and that is, by having a dirty thumb holding your plate. You will find, in forty-nine cases out fifty, that those fern leaves come from the corner at which u hold the plate for cutting it. After it is dry you will find n leaves at the corner where you hold it."

Mr. Spencer: "The difficulty occurs at the opposite corner which I hold the plate."

Mr. North, of Cleveland: "The gentleman will find, I think, at it is not where he holds to cut it, but where he immerses in the bath and takes it out to put it in the plate-holder. If ere is any impurity on the finger, these little ridges will be und at the place where he takes hold at that time."

Mr. Rulofson, of San Francisco: "We are getting right at e pith of the thing now—getting the bull right by the horns. is is the rock on which ninety-nine out of every hundred otographers foundered. Scarcely a week passes but what I ceive a long letter asking me to tell how to avoid this diffi lty. My theory is not to finger any of my negatives. Some thor on photography gets off this remark, that 'Causes so mple as to escape our notice reverse our success in photography.' That has been my experience. It seemed that whatever might be done, these internal 'fern leaves' would be present. I know how to make one hundred millions of photographs without seeing it. I think one of the causes is to be found in pyroxyline, which produces a hardened film. No matter whether you put acid or alcohol in the bath, or in what proportion you put it in, it will not flow evenly over; or, should it flow evenly, it will not penetrate. I say I think that is one reason; there may be others. The reason why I rise to speak to this question is because two or three have asked me privately with regard to the treatment of the bath. I verily believe, if ordinary care is taken in the selection of collodion, and if any of the ordinary published formulæ is used, and if persons will adhere to a few simple rules, that they will experience no trouble. I do not think the man lives that can repair a bath. I do not believe it is susceptible of repair, after a length of time. What I mean is, by adding a little silver and so on. My method is this: I do not think there has been a day for eight years, but what I have had six baths constantly employed from morning until night, and for six years I do not think I have seen one negative out of film. I will tell you how I manage it, and will leave brother Wilson, and the other able writers, through his *Photographer*, to give it to you in form, as I think that is the proper organ from which you should get those things. When a picture does not please me I look to the bath. I do not give orders about it, but look to it myself. When a bath ceases to be in order I place it aside, have it filtered and reduced to the proper strength, rendered absolutely neutral, and set away in the sun for six weeks. I have, perhaps, a dozen bottles standing in a row on a shelf, and when we want to use a bottle we take the one that has stood longest on the shelf, and so have new bottles always ready. I undertake to say, if every photographer present will abandon the idea of tinkering his baths, and will adopt the idea of placing them in the sun, he will not have that or any other phenomena. We all know very well if you do not fix your plate well, if you do not allow your collodion to set well, but immerse it in the bath too quickly, twenty different phenomena will be produced; the result will be according to the circumstances which cause the phenomena.

"But there is another point absolutely necessary, which is, perfect cleanliness. Some men manipulate the picture, wash in the same water and wipe on the same towel two hundred times, leave fifty different finger-marks on the corners, go on and develop it, and then, after a few days, find the picture is not complete, and then send to me and ask me how to remedy it; and I send word back to each to keep his hands clean."

Mr. Covert, of Lawrencevillo: "When I have had a bath get out of order, I dilute it down and fuze it, and boil it to proper strength and set it in the sun for a few days, and have since that had no difficulty. As for hardness or softness, I never had any difficulty with either; I always get good, soft pictures when I have proper collodion, and I work my baths very slightly. As quick as these get out of order, I set them in the sun."

Mr. Rulofson: "I would evaporate them down ninety to one hundred grains to the ounce. In order that all alcohol and ether be driven out, I put in water, then filter, reduce it to its proper strength by adding water and bicarbonate of soda, making it absolutely a neutral bath. I use the alkaline bath."

Mr. Bingham: "When my bath gets so that it will not work just as I want it, I add a little *caustic potash* with the solution, and set it in the sun from one to six weeks; when I want to use it I filter it; sometimes it will require a little acid to bring it up to the proper point, and I find I get very soft pictures when my bath is handled in that way. I think there are times when a bath needs doctoring; but when it gets so sick that medicine will not do it any good, it then needs evaporating."

Mr. Webster: "To remedy those fern leaves, I use simply iron and acid for my developer. I add a little acid to this iron, and then my developer will not crawl."

Mr. Hall: "I believe about three-fourths of this trouble arises from want of experience, and I judge that from this fact:—I had a young man to do the coating of plates, another one to make the sittings, another one to develop the plates, and the young man that had been through, will be entirely under my charge. I had him doing the developing. I had taken a young man in to coat plates. The young man doing the developing got into difficulty. I enquired what the difficulty was. Says he, 'That man don't coat plates worth a cent; no man can develop from his coating.' I would send a young man of experience in coating to coat the plates, and, almost invariably, the difficulty was at an end.

"I believe, further, a great many of these difficulties arise from the operator doing too many things; consequently he cannot get thorough practice in any one particular."

Mr. Johnson, of Cleveland: "I think the difficulty arises, in many cases, from imperfect chemicals, obtained from inexperienced druggists. There is one particular item, and that is acetic acid. I think, by having pure chemicals and careful manipulation, these difficulties will be obviated."

Mr. Hesler, of Chicago: "If there is nothing else on the floor I should like to say a word about the developer. The great point for photographers who make photographs to obtain a livelihood is not so much the ability to make a caricature as to make a pleasing picture. They must be made at the time the sitting is had. The object is to get expression, no matter how good your chemical effect may be on the plate. People like a good expression in their picture rather than chemical effect."

Mr. Waterman: "I want to ask some of these gentlemen who talk about sunning the bath six weeks, if they do not think, when the bath was neutralized and evaporated enough to drive off the alcohol and ether, that six hours' sunning is not just as good as six weeks?"

Mr. Rulofson, of San Francisco: "Experience has shown me that it is not as certain in its results as six weeks' sunning. It is twelve years ago that a photographer came to a little town I was trying to live in, and was going to use me up; but he did not stay long, and when he departed he left his office goods behind. The person in whose hands the goods were left, at the expiration of three years begged me to take them off his hands. I would take nothing but the silver. As an experiment I put the silver in the bath-tub and immersed the plate, and it was the first really excellent plate I ever made with collodion."

Correspondence.

EDWARDS'S COMBINATION PRINTING FRAMES.

Dear Sir,—Your correspondent, "An Old Photographer," has some remarks in reference to my combination printing frames to which, with your permission, I will claim a small space for reply.

The small fee charged for licence is not intended to restrict the use of the apparatus, nor do I fear that it will have that effect. The introduction of new appliances for any kind of work involves a considerable expenditure of time and trouble to ensure success, and where a great saving is effected, it is not unusual for inventors to receive a remuneration in addition to the cost of the apparatus or machinery. In fixing the amount of the licence fee, I had hoped to bring the invention within the means of all, the sum of two guineas being inclusive, without any further payment whatever.

I have found the means of overcoming a difficulty long felt by every artist photographer, and in placing a new power in their hands, surely it is not "exorbitant" if I ask for a small share of the first week's profits in return.

With regard to the prices of the frames, they are the lowest that can be charged consistent with a really good and durable article; owing to the great accuracy required, only the best material and workmanship can be employed. A cheaper frame might possibly be made, but there would be constant danger of loss of register, and consequent disappointment in the result.

I have nothing to say to "Ingenio," who anonymously avows his intention to infringe the rights and appropriate the ideas of others, except to remind him that should he carry out his dishonourable intentions he may possibly find himself in a scrape from which his "wits" will not save him. But for the existence of such individuals, I apprehend there would be no necessity for the patent laws, or the protection they fortunately afford to inventors.—I am, dear sir, yours truly,

Hackney, July 12th, 1870. B. J. Edwards.

PAUL PRETSCH'S PHOTOGALVANOGRAPHY.

Sir,—It seems to be a very hard labour to refresh the memory of some people respecting some things which were done years ago; so I may mention that I exhibited, during the last exhibition in London, in the English department for photography, many of my specimens for copper-plate printing, as well as for surface printing. Mr. Le Nevo Foster has been the manager of that department, and I think he must know of it; Mr. Carlton, one of the firm of Messrs. Carlton, Walker and Co., in Manchester, and Mr. Llewellyn, have also acknowledged my method. I have left all my plates and blocks in London, and sold them for a trifle. Some of the very nice plates are in possession of Mr. Brooker, copper-plate printer, 78a, Margaret Street, Cavendish Square, one of the plates being the "Venus de Milos," which is untouched altogether. One of the plates untouched is in the possession of Mr. Hogarth, and some of them, I think, are in Kensington Museum. The plates for Prince Albert have been delivered, but not by myself, and I don't know where to. There is especially one by Raphael amongst them, which is exceedingly beautiful.

For the purpose of publishing something done by my process, and the first beginning of it, we chose photographs from nature, which were very beautiful, but had some faults in the foliage, especially in the nearest distance; and, as a matter of course, there was no sky in them. The work demanded was now to the engraver, and I do not think that scarcely two of them finished the work properly, although I have practised with heavy costs some twelve or fourteen of them. I have the two cathedrals of Strasbourg and Rheims, and the vicinity of the river Garravalt, which have been touched only for five pounds each; but these plates have been not improved by touching, and they would have been preferable if left almost untouched at all. Nevertheless, in spite of these touchings, the plates are so nice—have so many beauties and peculiarities—that I must consider them more than serviceable

I have the impressions of about forty plates which have not been touched at all; about twenty of them are of the first lot, which was done in the first year. They are done from photographs from nature, and when touching is applied, it can only be applied in such works from nature. The difference of a plate from works of nature or of art is very important. I have an impression of a touched and of an untouched plate from a drawing by Leonardo da Vinci; the first mentioned is of no use at all, but the second one of the untouched plate—although printed rather in a worse way—shows the great capability of my process. Of the portrait of Prince Albert I possess also two proofs; the one is well touched by a clever artist, the other one untouched, and I must confess that any connoisseur will find it preferable to the touched one.

Besides the mentioned specimens of copper-plate printing, I have also thirty-nine specimens of block printing, which are not touched at all, and prove the immense value of the said process. The troubles and failures experienced at such a work are never to be paid. I have made a great many blocks, till I could use one of them for showing. The plates and blocks are in London, to be sure, but where they are, how they are distributed over it, whether there are many of them not in existence at all, some of them—perhaps the nicest—not to be had or seen at all, I can only guess.

Those two processes are important enough to carry them out; still, I think, by a modification of them, to have it in my power to do also geographical charts or maps in a manner which has never been done before.

I will reiterate the three points of my two processes:—

1. The more or less *touched proofs* of the first starting.

2. The *untouched proofs* of the same process. Both processes are executed by copper plates for the intaglio printer.

3. The altogether *untouched proofs* of my second process for executing blocks for surface printing, which has been almost overlooked at your meeting, because nobody in any way mentioned it. Paul Pretsch.

June, 1870.

THE COST OF PATENTED APPARATUS.

Dear Sir,—I think your correspondent "Ingenio," in last week's News, does but echo the sentiments of photographers generally as to the cost of patented articles used by them; and iink that patentees in general, and photo patentees in icular, would find it to their interest to be more moderate heir prices.

'ake, for instance, Grisdale's washing machine, which is a ly useful apparatus, the *reduced* price of which is £7 10s. s price is enough to prevent an ordinary photographer ing one; whereas, if the machine were sold at a reasonable e—say £2—it would be to the interest of most photographers have one, thereby increasing the profits of the patentees benefiting photographers generally.

'ake another example. There have been, from time to time, e mounting machines introduced to the profession at ortionate prices, which, after a great deal of puffing, have ved to be failures. Having purchased one of these things found it useless, I put my wits to work, as I have no doubt ers have done, and invented a little affair with which I can int two hundred cartes per hour. The thing is so simple t it could be sold at a good profit for five shillings. I shall most happy to give full particulars to any brother photophers who may wish it, that they may avoid the expense of h-priced and useless apparatus.—Yours truly,

'ambrian Studio, Pontypridd. THOS. FORREST.

'S.—I may mention that I paste (or, rather, glue) my pictures the same plan as the one used by a correspondent to the *'ladelphia Photographer*, mentioned in the NEWS of ie 24th.

We shall have pleasure in publishing details of the aid to inting our correspondent mentions, which will save our respondent and his brother photographers interested in the ject much trouble in letter writing.—ED.]

EMPTY BOTTLES.

SIR,—Will you kindly let me know what is the best thing lo with empty bottles? I have many dozen, and the number lai'y increasing. They are not worth carriage, and most of dealers refuse to have them back. But sixteen and twentyice stoppered bottles are worth more than twopence per zen, which is the price offered at the door.—Yours truly,

EMPTY BOTTLES.

[Can any of our readers make a suggestion on this subject? e accumulation of bottles is unquestionably troublesome, l it is annoying to be compelled to dispose of really good tles for a nominal sum.—ED.]

Talk in the Studio.

"THE NOBLE RED MAN."—An American photographer, iding in the Crescent city, referring to some photographs of l men, says:—"The old man is a great chief, the great dicine man of all the tribes near here, and a greater old ef never lived. I have tried for two or three years to get picture, but he would not have it taken. One day I got n in my gallery; he was sick, and I said I had plenty of dicine, and happening to have some Epsom salts in the llery, I gave him a dose and a half dollar to sit, and while veloping the plate, he stole my camera cloth and left. The ble red man!"

BEWARE OF THE PHOTOGRAPHER'S LAVATORY.—A farmer ne into Paris one day last week, accompanied by his two ns, to get their photographs taken. To make the youngsters it and trim for the pose, papa asked the artist to give them ne water to wash off the dust of travelling. The photographer, ng very busy, simply told them they would find a lavatory the adjoining room, and the lads retired to polish up their es. Scarcely, however, were the negatives taken, when the intenances of the lads were observed to be gradually becoming a dusky hue; and, finally, to the horror of their father, they came as black as crows. The photographer then divined truth. They had plunged their heated faces into one of chemical baths used for photographs. The wrath was eat of their fond mamma when two niggers were brought ck to her the same evening.

LITERARY GATHERING AT SIDCUP.—The annual dinner to contributors of the *South London Press*—a journal which should interest photographers on account of its constant recognition of the claims of their art—and their friends was given at the Black Horse, Sidcup, on Saturday, on which occasion Mr. James Henderson entertained Messrs. Hermann Vezin, Tom Hood, John Proctor, William Black, Charles Gibbon, J. Crawford Wilson, G. Wharton Simpson, W. Sawyer, C. Read, Dr. Muter, &c. The gathering was of the most agreeable nature.

COMBINATION PRINTING.—Herr J. Schmidt has forwarded a variety of examples of his method of combination printing. They are all very excellent.

SECOND-HAND APPARATUS.—Mr. Morley has just issued a very complete catalogue of the second-hand apparatus he has for sale. The stock is large, and includes some capital instruments.

FINE ART EXHIBITION AT BRADFORD.—An exhibition of works of industry and art will be held at Bradford during the months of August, September, and October, at which a photographic department will be arranged.

MAGIC-LANTERN PICTURES ON GELATINE BY A NEW METHOD.—We learn from the Journal of the Franklin Institute that Prof. Morton exhibited at a recent meeting some pictures on gelatine prepared in a manner devised by Mr. Shepherd Holman, a member of the Institute, for the magic lantern. For this purpose a sheet of gelatine, such as is used for tracing by engravers, was securely fixed over an engraving, and with a sharp steel point (made by grinding down the end of a small round file) the lines of the original traced pretty deeply on the transparent substance. Lead pencil or crayon dust was then lightly rubbed in with the finger, and the picture was at once ready for use. A number of such drawings could be easily carried between the leaves of a book, could each in succession be in a frame or cell made of two plates of glass separated by a frame of thin card or three edges and united by paper or muslin pasted around the same edges. The effect of these drawings in the lantern was excellent, and their ease of production very great.

BLACK PLATINA UPON ZINC.—M. Neumann has instituted a series of researches to find out the best and most suitable material to produce upon zinc—or, rather, upon statuary or ornamental objects made of that material—a pleasing blackish coating, without the necessity of impairing the effect of the natural colour of the metal, as would be the case when an oil paint or varnish is used. The best results were obtained by the author when nitrate of protoxide of manganese was used. This salt, on being heated, is decomposed, yielding black peroxide of manganese, and the degree of heat required is not so high as to affect the zinc. To one litre of pure water fifty-four grammes of the nitrate alluded to, and containing six equivalents of water of crystallization, is, according to the author, the best solution for this purpose; and the specific gravity of this solution at 14° R. is stated by the author to be 1·125.—*Dingler's Polytechnic Journal.*

ON CHANGES IN THE COLOUR OF FLOWERS PRODUCED BY AMMONIA.—M. Vogel (*Sitzungsberichte der kon. bayerischen Akademie der Wissenschaften zu München*, 1870, Vol. i., Heft 1) publishes the results of some experiments on the changes produced in some vegetable colours, especially those of flowers, by ammonia. The experiments were divided into three sets, according to the length of the time of exposure: a quarter of an hour, two hours, and twelve hours. The colouring matter is of two kinds, more or less intimately united with the tissue of the flower itself, and requiring a longer or shorter time to produce any change. The change produced in the colour of some flowers—such as the rose and phlox—by the fumes of tobacco is entirely due to the ammonia which it contains. M. Vogel found that some colours are altogether unchanged by lengthened exposure to ammonia: such are yellows, all reds—except in the case of the zinnia, which is converted into a brown red—and dark violets. Blue is sometimes unaltered, sometimes converted into a dirty green, and then bleached. In some cases not only the colour but the structure of the flower is destroyed. The changes are generally the same as those that take place during the withering of the flower. M. Vogel thinks that these observations may be of practical importance in the manufacture of vegetable colouring matters like the aniline dyes.—*Academy.*

HOW TO SAVE WEIGHTS.—An American contemporary says:—"Having ascertained the weight of each chemical that you require to make your bottle full of solution, take a pill-box and make a counterpoise with shot, mark the name of the chemical and the weight for which it stands on the lid, then you only require to put these boxes in the scale-pan, and you have no trouble in reckoning your weights every time. For instance: if you have to make an iron developing solution in a Winchester quart bottle, take the box marked *Iron*, put it into one pan, and in the other crystals of iron to balance. Citric acid, pyro, hypo, nitrate of potash, &c., may all have their boxes.

Colouring Magic Lantern Slides.—A correspondent of the *Philadelphia Photographer* says:—"I get over the disposition of the colours to crackle on magic lantern slides by albuminizing the pictures before drying, and this improves the film to colour on; it is a point gained, as the colours take better and the film is secured. In fact, I found this easier to colour on than any before. In using some water colours, such as gamboge, they will run off in varnishing; a little gum used with the colour will prevent it."

Progress of Discovery.—Dr. Vogel remarked, in a capital address to the American National Photographic Association, that Liebig had said, "'Each new discovery must pass through three different periods before meeting with a general acknowledgment.' At first, it is proven that the new discovery is worthless and impracticable; second, later it is asserted that it is nothing new—that a similar discovery was made perhaps a hundred years ago; and it is not until the third period that the discovery is acknowledged and put into practical employment."

To Correspondents.

Collodio-Chloride of Silver.—We have examined a bottle of collodio-chloride of silver left at our office, which was either without a note, or the note has got mislaid. The presumable object of inquiry is the cause of the chloride of silver precipitating instead of remaining in suspension. We have so rarely been able to meet with this defect, even when trying to produce it, that we cannot speak with absolute certainty upon the conditions. We have found, however, that two or three causes will tend to produce the result in question. If too much water be employed in making the solutions of the salts employed, precipitation sometimes occurs, the chloride of silver forming in damp spongy clots which readily fall, instead of being formed in an infinite state of subdivision easily held in suspension. Too much water appears to have been employed in the sample before us. The hasty mixing of the component parts, instead of a slow and gradual mixture with agitation between each addition, is a cause of precipitation. We have found that if the chloride solution is first added to the collodion, and next the nitrate of silver solution, precipitation is more apt to occur than if the opposite course be pursued. The silver salt should be first mixed with the collodion, and then the chloride solution added, a few drops at a time, shaking the bottle between each addition.

Von Dix.—We have not been able to learn anything specific about the person you mention, except that he is in business at the address advertised. You are in error as to our duty in relation to such matters. We cannot undertake to examine the claims of the persons advertising in our columns, either as to ability or honesty. As a rule, we believe them all to be trustworthy; but when an advertisement is received at the office in the regular way of trade, if our conditions are complied with, it is inserted, as in all other newspapers. We do not know anything of the truth of the announcements, and if, as you suggest, we were to stigmatize any one in our pages as a "sharper," we should render ourselves amenable to the law of libel. It is not improbable, if you get some agent in London to look after the matter, that you may still obtain the goods for which you have sent money.

One who Tries.—As a rule, a good optician sends out his lenses so fitted that they shall do the best work of which they are capable, but it is quite possible that through carelessness a lens may sometimes be sent out with the component parts not in their best position. As a rule, separating the lenses contracts the field, but occasionally improves the definition and flatness of field. Of the two lenses you mention we should choose that with the longest focus. The time of exposure need not be sensibly more, and the definition will be better.

J. R. W.—A studio with a lean-to roof, if properly constructed, answers exceedingly well.

Thomas Forrest.—We shall have pleasure in receiving the communications to which you refer.

An Albuminizer.—In the selection of your plain paper, and most of the details of albuminizing, experience is the most val able guide. For the selection of paper a technically instruct eye, only gained by practice, is necessary. It is important, possible, to secure paper not quite newly made, as the albumen more easily kept on the surface when the sizing matter of t paper is well hardened by age. To prevent the tendency in t albumen to crack when used without water, a few drops of glyceri have been recommended. Very fine tones may be obtained wi paper to which 5 grains of chloride of barium and 5 grains chloride of ammonium are used to each ounce of albumen solutio The paper should be prepared and dried in a room of from 70° 80° Fah.

Venator.—In producing a view of a building in two exposures two negatives, you cannot secure strictly accurate perspective; b you may arrange your plans so as to produce the minimum appreciable error. The immediate circumstances will oft suggest to an operator of judgment the best method of proceeding but there are some things to which you must give attention, whic in the examples sent, you have neglected. It is imperative th your camera shall be parallel with the building in each pictu and not turned round so as to point in one direction in one pictu and in another direction in the other. Having taken one negativ mark the exact proportion of the building at top and bottom the ground glass, move the camera laterally, and focus again f the other half, ascertaining that the size is rigidly accurate. 2. printing from two negatives the mode of joining depends much the subject. In a building you make the junction an even straig line, taking great care to join accurately. Vignetting the juncti is best suited for foliage, &c. The process in that case is simpl the edge to be joined is graduated off with a little black varnis and the two graduated edges in printing over-lap each other, a so form a junction which is not easily seen.

Macy.—The prints have several good qualities. The chief fault an excess of front light. The white drapery is very well rendere We shall have pleasure in receiving details.

A Victim says he has sent stamps for a "Vade Mecum," and h not received it, and suggests that we should warn our read against the advertiser. Unfortunately the law of libel preclud our entering into detail in such matters.

The Wax Paper Process.—In reference to the query of a corr spondent in our last, as to a work on wax paper, we ascertain th the English translation of Le Gray's work on this process is print, and published by Mr. How, of Foster Lane. Mr. Beard, Church Street, Cardiff, has a copy which he is willing to supp to our correspondent.

E. P.—The meaning of the phrase "chemical and optical foci n coincident" is, that the luminous rays are brought to a focus one plane and the chemical rays on another plane, either within without the visual focus. In a properly corrected photograp lens the visual focus and the chemical focus are coincident, so th when a sharp image is obtained on the ground glass a sharp ima will be obtained on the sensitive plate. Where this coinciden does not exist, the chemical rays will come to a focus at a pla nearer to the lens if it be under-corrected for colour, and furt from it if it be over-corrected for colour. This may be rectified giving the lens a turn in or out, according to the nature of t error in correction. For practical purposes in portraiture a fix distance will serve, but the amount of variation is not the same all distances.

N. Briggs.—Thanks. It had been overlooked. It has been du posted now.

W. May.—Thanks. In our next.

New Zealander.—Your subscription is now paid up to No. 701

Several Reviews and other Articles are compelled to stand over un our next.

Several Correspondents in our next.

Photographs Registered.

Mr. T. Tyley, Bristol,
Photograph of Lady Wilmot's Monument in Amos V Cemetery.

Mr. Thomas Kingsmill, Ashford,
Two Photographs of Interior of Ashford Church.

*_** All photographs forwarded to the Publisher for registration rece attention at once; but the pressure on our space sometimes compels to defer the acknowledgment in this column. It should be borne mind, therefore, that non-acknowledgment at once does not necessar imply non-receipt or non-registration.

Advertisements and communications for the Publisher shou be addressed to 15, Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.

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CONTENTS

	PAGE
Enlargements on Canvas by Transfer	337
Photography in Gaol	338
Low Prices and Degeneracy	338
Impurities in Rain Water	339
Critical Notices	339
Printing with Fumed and Washed Paper. By S. Wortley, Lt-Col.	340
Notes from the Continent. By Our Own Correspondent	340
Varnishing of Negatives. By Wm. Blair	341
Printing in Carbon Described in Two Chapters. By W. T. Bovey	341
Selecting and Preparing Glass for Negatives	343
Sun-Pictures without a Camera	345
Application of Photography to the Production of Maps. By Lieut. J. Waterhouse, R.A.	346
Correspondence.—Cost of Patented Apparatus—Water for Printing Bath—Flat Baths for Negatives—Photo-Galvanographic Company—Flat *versus* Vertical Baths	347
Talk in the Studio	347
To Correspondents	348

ENLARGEMENTS ON CANVAS BY TRANSFER.

In our last volume we described a method of producing enlargements on canvas which we regarded as at once simple and excellent in a degree far beyond any other we knew. We will briefly repeat the reasons we had for forming such a high estimate of the method in question.

I. Large pictures finished in oil colours are always most effective on canvas, and all artists prefer its use, as affording a more pleasant surface for their work, and producing, by its texture, a more satisfactory result than paper.

II. The method in question is the most simple mode we know of obtaining an image on canvas, and, being a transfer method, all the risk of imperfect fixation or imperfect washing which attends the method of printing on canvas direct is avoided.

III. The enlargement is produced on collodion; and all experience has taught that a developed image on collodion is the most permanent form of silver picture we possess. Indeed, if properly produced and properly preserved, it has never been known to fade. We doubt if such a thing as a faded negative is on record.

IV. Enlargements on collodion are, when skilfully produced, by far the most perfect amplifications known. The delicacy of the film compensates for the tendency to coarseness which the operation of enlargement necessarily produces, and it is possible to produce pictures enlarged ten or twelve diameters scarcely distinguishable from images produced direct without enlargement at all.

In this brief enumeration of advantages we briefly indicate one, which is entitled, however, we think, to the gravest consideration. We refer to the fact that the picture is finished before it is placed on the canvas, and that the latter, therefore, never comes into contact with hyposulphite or other chemicals. There are several very effective methods of producing photographs on canvas which are perfectly satisfactory in all points except this. The prepared surface is impregnated with the chemicals. The image is printed, fixed, and washed on this surface. The fixing and washing, doubtless, may be perfectly effected, and, in the hands of experienced workmen, it is probable that permanent pictures are produced. But when we remember the risks at all times which exist of imperfect fixation and imperfect washing, and when we add to the ordinary risks the increased uncertainty involved in dealing with an image imbedded in a repellent waterproof surface, which cannot be submitted to the same soaking treatment as a paper print, we feel that the chances are not unquestionably in favour of permanency. Add this question of probability to that of fact in the experience of so many photographers who have seen well painted photographs by skilful artists gradually growing dingy and dull, and the arguments in favour of a process giving immunity from all these risks become well-nigh unanswerable.

We have recently had opportunity of seeing the operations in this process conducted on a large scale, and of again hearing and examining the evidences of its value. We have on this occasion given especial attention to the one point in regard to which we had before seen, however remotely, the possibility of doubt: we refer to the possibility of the transferred collodion film leaving the canvas. We find that experience proves not only that the film in no case shows any tendency to leave the canvas, but that when once the transfer is complete it is scarcely possible, by any process of scrubbing, scouring, or dissolving, to get the image from the canvas if such a process be desired.

To secure this condition it is necessary, however, to use moderate care in the preparation of the canvas. If the prepared canvas were used just as it is received from the artist's colourman it is probable that the transferred film might blister or peel; but if the horny skin of oil paint be removed by washing with a hot solution of washing soda and soap applied for a few minutes with a flannel or sponge, and then well rinsed, there is no danger of peeling. This treatment leaves the surface of the prepared canvas matt and non-repellent of water. Instead of water running on the surface in irregular streams, as if it were greasy, as it does from the untreated canvas, it now runs in a perfect even sheet, and when dried it receives the gelatine solution without any repulsion, appearing, indeed, to absorb the solution slightly into the matt surface. The gelatine solution is applied with a sponge, and should not exceed ten grains to the ounce, a less proportion being sometimes used. The canvas thus prepared may be kept ready for use, but care should be taken not to handle the gelatine surface with greasy fingers.

In order to save reference back, and also to note in passing any modification in the manipulations or formulæ, we will briefly repeat the operations as we saw them.

The collodion should possess a good body. If it be prepared expressly for this operation, it should not possess less than ten or twelve grains of pyroxyline to each ounce of solvents. A good commercial sample of bromo-iodized collodion may be used, to each ounce of which five or six grains of pyroxyline or papyroxyline have been added. A plate coated with this is immersed in a nitrate solution in good condition for negatives, a large flat dish being most convenient for the bath. Either daylight or artificial light may be used: we have seen both, but preferred the effect of the magnesium light, by which a good life-sized head was produced in about two minutes from a cabinet negative. Any of the processes we have described for producing collodion images, either in enlarging, photo-crayon, or eburneum operations, may be employed, and probably that we have often described, in which pyrogallic acid development and gold toning are used, would be found the most efficient of any. But it is important to bear in mind that a collodion of good body is absolutely necessary for success in the next operations. A good transparent positive on collodion having been obtained, the transfer to prepared canvas is the next operation.

The collodion enlargement, having been fixed, toned, and washed, is now placed on a levelling-stand, and a strong solution of citric acid in water—the exact strength is unimportant; say thirty grains to an ounce—is poured over it, and allowed to remain a few minutes. The action of the citric acid is two-fold: it increases the toughness of the film, and it loosens the film from the glass. After a few minutes the citric acid solution is poured off the plate, and preserved for subsequent use. The film is now very thoroughly washed under a tap for five or ten minutes, during which time it will have become completely loosened from the glass, upon which it will readily slide about. Should it not become loose during the washing, it must be again treated with the citric acid solution, and again washed. If a tardiness to loosen be noticed, the edge of the film may be lifted, and a gentle stream of water suffered to run underneath.

A sheet of tracing-paper the size of the plate is now taken and placed upon the film. If two persons can be engaged in the operation, some little trouble in subsequent operations will be saved if the tracing-paper is first wetted and suffered to expand; each person then taking hold of two corners, the tracing-paper is gently laid upon the film. If one person only is engaged in the operation, the tracing-paper is more easily managed dry in the first instance, as there is less difficulty in handling it so soon as to get it down flat on the film when a large plate is used. One edge of the collodion film is then turned over the tracing-paper, and the whole, paper and film adhering, lifted by a sliding motion off the glass, and placed, film down, on the prepared canvas. It is then covered with blotting-paper, and thoroughly well rubbed down with a squeegee, the tracing-paper—which has simply served as an aid to lifting the film, and, by its transparency, permitted the position of the image to be seen in placing it on the canvas—is then lifted away, and the transferred film left to dry.

When dry, this film adheres so perfectly to the prepared canvas that it cannot even be scraped away without injuring the surface of the canvas. It cannot be easily removed even by scouring with hot water or a hot solution of soda In no instance has it chipped, or exfoliated, or in any way shown any tendency to leave the canvas. The adhesion is perfect, and the result in every way satisfactory.

PHOTOGRAPHY IN GAOL.

Photographers are generally interested in all methods of extending the application of their art, and the recent order for its use in prisons as an aid to the identification of criminals was regarded with satisfaction, as making an important addition to the many benefits photography has conferred on the community. Amongst the class of working photographers it was naturally regarded also as a means of extending employment, and so improving the position of photography as an industry. A paragraph in a report of the recent business proceedings at Middlesex Sessions does not enable us to congratulate operators on the probabilities of lucrative employment afforded by the introduction of the practice of prison portraiture. The report on this subject run as follows:—

> " Photographs of Prisoners.
>
> "On the motion of Captain O'Brien it was resolved that an extra clerk (having a knowledge of photography) be appointed for the House of Correction at Westminster, at a salary of £70 a year, for the purpose of performing such clerical duties as may be required, and of preparing photographic likenesses of the prisoners coming within the clauses specified in the first schedule of the Habitual Criminals Act, 1869."

It is scarcely necessary to observe that the photography in criminal portraiture must be good to be of any value in identification. The rendering of the subject is an imperative condition. Nor is it necessary to add that the work will not be pleasant: the class of sitters by no means charming, whilst considerable tact and resource will often be necessary in securing satisfactory portraiture. Yet, by accepting twenty-seven shillings per week (about half the remuneration of an ordinary good operator), a photographer may secure the opportunity of spending much of his life in the savory society of gaol-birds; adjusting and posing them, time after time, until a likeness is secured; bearing with their natural incapacity to be steady, or their wilful resolve not to sit still; meeting their trickery with craft or firmness, but always with patience. Anyone who, like Mark Tapley, is anxious to "come out strong under creditable circumstances" may find here a rare opportunity. But, besides being a good photographer, the candidate must be able to undertake such "clerical duties as may be required," and these clerical duties, indeed, seem to take precedence of the photographic requirements. It is possible that the commonplace mechanical capacity to write a good hand may be secured for twenty-seven shillings weekly; but we are much mistaken if the authorities are not woefully disappointed if they hope to find the requisite photographic ability to undertake criminal portraiture, with or without clerkly skill, for the amount of remuneration set down in their resolution.

LOW PRICES AND DEGENERACY.

We have often warned our readers against the degeneracy in their art which must inevitably result from that form of competition in which the struggle is made rather to secure patronage by low prices than by high quality. It is somewhat mortifying to find that photography has already made such progress in this direction that it is quoted as an illustration of the mode in which the "cheap and nasty" system is carried on. A contemporary (the *Lithographer*), in an article lamenting the decadence of lithography as an art, states that one of the causes is the fact that it is conducted in some quarters "on the photographic system now in vogue: This style for sixpence!" That such an illustration should be possible is certainly humiliating; but whilst we are disposed to repudiate the insinuation that this mode of conducting business is more common in photography than in many other industries, we cannot but agree with the spirit of the article, which so strongly deprecates this form of enterprise. It forcibly points out the fact that in the great race between price and quality the latter is certain to suffer; and illustrates the remark by reference to various forms of commerce, especially those associated with productions of art industry, which depend on the exercise of taste, in which fair remuneration is a necessary condition of culture and excellence. The writer in question remarks, with great truth, that "the competition is from within rather than from without; nevertheless, it *is* competition, and it has produced the usual results. The competitor most to be feared is he who, utterly regardless of quality, brings prices down so low that he who would pay his creditors finds it impossible to provide the means of doing so out of the same class of trade." We know that the ready answer of the political economist is, that competition is the legitimate corrective of the evils which competition induces, and that by its means quality and price must find their level, real excellence eventually commanding a fair equivalent of remuneration. Unfortunately this is only true in a very qualified degree. When prices decline quality must suffer; and the general public being much more able to appreciate the tangible fact of a low price than it is to recognize high excellence, the latter is inevitably neglected, and the art necessarily degenerates. Even in relation to common articles of daily consumption, with the standard of excellence of which every one is supposed to be more or less familiar, adulteration is a constant concomitant of undue cheapness—

or, rather, lowness of price. In matters for the due appreciation of excellence, in which some degree of technical or art culture is necessary, the public will often be misled, and will accept the inferior and vulgar because apparently cheap, rather than that in which art excellence on the one hand, and honest care in all stages of production on the other, demand that the artist shall receive a higher rate of remuneration for his work. The remarks of the writer to whom we have referred, made in relation to lithography, are applicable with increased force to photography. He regards the profession "as the guardian of the public taste in all matters pertaining to 'the craft,' and insists on the use of all means of raising the standard rather than lowering it." As a rule, the public taste is formed by those who cater for it; and it will, within reasonable limits, accept the standard of excellence, as well as the standard of price, which the profession shall, with any degree of unanimity, place before it.

IMPURITIES IN RAIN WATER.

A **report** just published by Dr. Augus Smith shows the extreme fallacy of relying on the purity of rain water. We have before mentioned Dr. Smith's experiments in washing the atmosphere and collecting whatever impurity it may contain in showers of water brought into contact therewith. The present report furnishes further interesting facts of a similar character. He states, as an illustration of the matter suspended in some atmospheres, which is carried down by rain, that in Pennicuick, in Scotland, the rainfall is calculated to bring down on every acre of land nearly six hundredweight of salt per annum; and that Carlesgill, nearly fifty miles from the sea, receives the spray of the German Ocean to such an extent that the salt becomes visible on the windward side of the trees, and the leaves of evergreens become browned. He finds that the rain of towns contains more ammonia and nitrates than the rain of the country, and there is less ammonia in the atmosphere at a greater height than at a lower one. The latter fact, it is suggested, may be due to the fact that ammonia rises with the water given off by evaporation. As it ascends, the ammonia forms nitrates, and therefore undergoes diminution. Inland atmospheres are free from chlorides, which diminish in definite ratio as we go inland, but the sulphates increase. Rain, he states, in all cases, absorbs into itself part of those substances which form the atmosphere, chiefly the more soluble, whilst the floating particles are also mixed with it. Rain is always found to contain carbonic acid, and also nitric or (as Schonbein asserts) nitrous acid. Snow water has more nitrous acid than rain water, and storm rain always contains more than common rain. Schonbein attributes the nitrous acid of rain to the action of water on the nitrogen. Ammonia is more abundant in rain after dry weather, and becomes less during a continuance of rain. It is also more abundant in summer than in winter. Organic matters, as will be readily understood, in the air are brought down by the rain. Hence the readiness with which rain water becomes putrid, while the addition of sulphuric acid makes it black. The rain of Manchester always contains small quantities of coal dust, partly dissolved and partly in a state of fine division. Rain, it is found, also yields small amounts of potash, soda, lime, and magnesia, and occasionally traces of iodine and iron.

Our daily contemporary, the *Standard*, well remarks on this subject:—"That 'rain from heaven' is necessarily pure is a vast mistake, if by purity we understand a mere oxide of hydrogen. The process of 'washing the air' has been carried out artificially, as well as naturally, with marked results. Air and pure water being shaken together in a bottle, the air yields up more or less of its impurities to the water. The water, thus impregnated, is afterwards examined, and the foreign matter becomes apparent. In this way we find the 'air washings' of London placed on record. Thus we obtain 20 grains of free ammonia at Chelsea, in comparison with 42 at Bethnal Green, and 89 in a back street near Lambeth Workhouse. The Metropolitan Railway, from South Kensington to Moorgate Street, yielded 47 grains of ammonia on two occasions, but only 15 on another. Albuminoid ammonia (once called protein) amounted to 48 grains at Chelsea, 83 at Bethnal Green, and 106 near Lambeth Workhouse. On the Metropolitan Railway the quantity averaged 163 grains. Hydrochloric acid averaged 281 grains on the Metropolitan Railway, and sulphuric acid (anhydrous) 3,223 grains. In Oxford Square, Lisson Grove, and near Belsize Park, the hydrochloric acid was 116 grains, and the sulphuric acid 835. These figures, it will be observed, are comparative, and we cannot state to what quantity of air they belong. We only know that the quantity of air is the same in each case. Next year Dr. Smith hopes to give us the absolute quantities.

Critical Notices.

A NEW STAR ATLAS. By Richard A. Proctor, B.A., F.R.A.S. Photo-lithographed by A. Brothers, F.R.A.S. (London: Longman and Co.)

Perhaps the best description of this atlas will be given by repeating here the full title as printed in the original. It is, "A Star Atlas for the Library, the School, and the Observatory, showing all the stars visible to the naked eye, and fifteen hundred objects of interest in twelve circular maps on the equi-distant projection, and picturing the heavens for the first time on a systematic plan without appreciable distortion on an adequate scale, and within a convenient volume, with two index plates, in which the six northern and the six southern maps are exhibited in their proper relative positions, all the stars to the fifth magnitude being shown with coloured constellation figures, and a letter press introduction." The comprehensiveness of the title is indicative of the completeness of Mr. Proctor's aim. In his introduction he examples the principles upon which the heavens may be charted, and clearly sets forth his reasons for attempting a revolution in this direction, which is unquestionably a reform. The equi-distant projection reduces distortion to a minimum, and the form and arrangement are admirably convenient for reference and correct estimate of relative position and distance. Except in the index maps, the old incongruous constellation figures are abandoned; and instead of adopting the plan hitherto common amongst astronomical cartographers, of aiming at distinction by adding to existing constellation nomenclature, Mr. Proctor has been sufficiently hardy to simplify the terminology applied at present to the minor constellations. The original maps, having been drawn on a large scale, and thus securing convenience and correctness, have been reproduced on a reduced scale suitable for publication and for reference, by means of photo-lithography, and the author pays a high tribute to the valuable services of Mr. A. Brothers, of Manchester, both in suggestion and execution, by whom the work has been executed. The work is a very valuable contribution to facilities for the study of astronomy.

PHOTOGRAPHIC STUDIES. By Col. Stuart Wortley. (Marion and Co.)

Many of our readers remember the series of instantaneous photographs of unusual grandeur exhibited by Col. Stuart Wortley at the last exhibition in Conduit Street. The series comprised a very remarkable collection of quasi-moonlight scenes, and of sunrise and sunset pictures, in which the effects of sky, cloud, and atmosphere were both rare and beautiful. There is great majesty and poetry in all the pictures, and the technical excellence in instantaneous photographs of such large size have very rarely been equalled. These pictures, it will interest photographers to know, are now accessible to the public, a series having been published, as well as the series of artistic heads of which examples were exhibited in Conduit Street. These heads, besides their artistic beauty, possess a special technical interest to photographers from their exceeding perfection as very large direct photographs. An example before us, in which the head is six inches in length, is exceedingly fine: without any lack of definition, it is free from the coarseness and distortion which have distinguished some of the very large heads produced direct in the camera. The modelling here is very perfect, and there is a soft, rich, fleshy texture which is exceedingly pleasing. The pose, expression, drapery, and general arrangement are all admirable.

VIEWS OF GUERNSEY AND JERSEY. By Thomas Singleton.

This is a series of very capital cabinet photographs, size seven and a-half inches by four and a-half inches, of the charming scenery in the Channel Islands. The pictures are characterized by fine taste in selection and treatment, and by very great technical excellence, being soft and delicate, yet brilliant and well defined.

◆

PRINTING WITH FUMED AND WASHED PAPER.

BY H. STUART WORTLEY, LT.-COL.

So many letters have been addressed to me on the subject of ammonia fuming that I venture to ask permission to reply to the various questions through your columns.

To the question, what silver bath do I use, I reply,

Silver	35 grains
Nitrate of lead	13 „
Sugar	2 „
Water	1 ounce

I am asked if it is not very troublesome fuming the paper. I never do fume it, the pads of the printing frames only being fumed. They are all placed in a large box over night with a little strong ammonia in a saucer at the bottom of the box, and by the morning they are quite sufficiently fumed.

The gold bath is made with a double chloride of gold and potassium, which I prepare myself. It is very easy to prepare, and is perfect in its action in ordinary silver printing, as well as in the fuming process. The same bath always remains in use, the double chloride of gold solution being added daily in the proportion of one grain to three sheets of paper.

As to washing the paper after sensitizing, one correspondent complains that he finds floating on water very inconvenient. I do not float. I rinse—*i.e.*, pass the paper through water without soaking—and then hang it up to dry.

Some writers ask what advantages I find. I find these: The paper is far more sensitive to dense portions of the negative; it never bronzes or blocks up the detail in the dark shadows; and the print is finished sooner than on ordinary paper. Further, it tones easily and certainly, taking any colour; and, a point of much importance, more silver is saved as residue by washing off previous to printing than by leaving the free nitrate on while the picture is printing.

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NOTES FROM THE CONTINENT.

[FROM OUR OWN CORRESPONDENT.]

I had intended sending a few notes from Paris and Strasbourg, but so few novelties did I see during my short stay in those cities, that I considered it superfluous to do so. Adam-Salomon, I am sorry to say, has been unwell for some considerable period, and I postponed, therefore, a visit to his renowned studio until a more favourable opportunity; owing to his indisposition he has been unable to devote the necessary care requisite in the preparation of exhibition pictures, and it is for this reason that he is not among the exhibitors at the present *Exposition* of the French Photographic Society.

Reutlinger and Levitsky still go on in their prosperous career, the favourite styles of portraiture being apparently cabinets, a form which is decidedly enjoying great popularity, both in Germany and Switzerland. Reutlinger, who was absent when I first called, but whom I trust to visit on my return, is doing, besides, some very fine 15 by 12 pictures, mostly full-length, which, while scarcely as brilliant as his well-known cabinet vignettes, are very soft and artistic, and are, in their way, almost, if not quite, equal to the pictures of Adam-Salomon.

It seems strange that the great reputation which Reutlinger has obtained should have been secured by the help of but a very small studio, in which it is possible to operate from one direction only. Some time since, in a discussion on the merits of a studio proposed by Dr. Anthony, several members of the London Society pointed out the disadvantage of only being able to take portraits from one side only. This objection appeared to me at the time a very plausible one; but when one takes into consideration the hard fact that two of the most successful European portraitists—Reutlinger of Paris, and Rabending and Monckhoven of Vienna—are capable in their studios of producing portraits at one end only of their studios, the subject certainly deserves reconsideration; for one appears almost tempted to believe that it is due chiefly to their devoting their whole attention and mind to one method of lighting only that perfect success has been attained. Granted it would be better if these artists could produce pictures equally good at both ends; but since this cannot be done, they finish what they do do in the most perfect manner possible.

At Milan, through which I passed a short time since there was little to claim a photographer's attention. Portraiture is at a somewhat low ebb, but some very good architectural sketches are to be seen, especially of the cathedral, which is decidedly a favourite model with photographers. Some large pictures taken of the roof would be a novelty, as this part of the building is one of the finest features, each of the numerous and highly wrought pinnacles being surmounted by a statue; and all of these would bear reproduction on a large scale. Indeed, in most pictures of the cathedral the statues are inappreciable to those who do not know of their existence, and do not, therefore, look specially for them.

At Menaggio, Bellagia, Cadennabia, and other places of summer resort by Italian citizens, photographers are scarcely to be found; but in the Engadine, the south east corner of Switzerland, which is fast becoming fashionable and popular, some very good work is to be seen. At St. Moritz and Pontresina, both favourite residences with the French, Italians, and especially English, pictures may be seen better than those produced in the largest towns of Switzerland. Indeed, with the exception of Geneva, Berne, and Lausanne, the Swiss towns are by no means celebrated for good photography, although there is no country, perhaps, which has afforded so much scope for the employment of the camera. The Swiss are content to allow the French and English artists to invade their land, and to buy from these their productions, to be resold again to visitors of the same nations. One Swiss photographer alone, M. Charnaux, of Geneva, has made some reputation of late as a landscape artist.

I am glad to see that sham photographs, which a few years back were very prolific, are becoming more scarce. I mean those brown-tinted prints—either reproductions by the camera, or lithographed direct—which were constantly sold to the unwary as direct photographs. A series of fifty small views of this kind, of the Suez Canal *fêtes*, was recently shown to me by a gentleman, which had been bought as a collection of veritable photographs, and were valued at three guineas, being really worth about as many pence. At one of the best shops in Zurich I found, on looking through a collection of cartes-de-visite, several of these spurious articles, shop-keeper the public preferred itlines were more sharply defined. a favourite, and a series of pictures Suisses" (veritable portraits with artificial backgrounds, which have been got up and printed by Braun, of Dornach) are very attractive, and enjoy a ready sale.

The majority of the smaller sized landscapes which are sold are of very inferior quality, a circumstance which seems due to the fact that their selling price is miserably low. Half a franc is the general price for any carte-de-visite landscape; and for this money it is, of course, impossible to produce and sell a good article. Indeed, the number of yellow, spotted, and badly printed copies that one sees when turning over a large collection is very great. One cannot but come to the conclusion that photographs of this kind, like all other manufactured articles, are best, and probably cheapest, to purchase in London.

I go from here to Mulhouse and Dornach, and trust to be able to give in my next letter a short account of M. Braun's extensive and well-known establishment at the latter place.

Zurich, 15*th July*, 1870.

VARNISHING OF NEGATIVES.

BY WM. BLAIR.

I have had no experience of the cracking of the film of varnished negatives, and yet I have had a considerable collection of these for many years in a room where all my washing operations are performed, and where the atmosphere is generally so damp that any wet article is much longer in drying there than in any other room in the house. What I have almost constantly used is spirit varnish; that is, simply shellac dissolved in spirits or alcohol. I think that this will generally be found superior to any of the cold-setting varnishes, some of which I have tried; and, so far as I did so, I found these had a tendency to become tacky in a hot sun. Some of my old negatives are iridescent, and the film seems almost indurated into the glass. Whatever, then, may be the respective merits of other varnishes, I am disposed to give my testimony in favour of shellac as a very safe one.

Some, however, seem to have an aversion to use this varnish, because it has to be put on hot—at least, the plate has to be heated—and if one has a number of negatives to varnish, it is no joke doing so in front of a great fire in a warm summer day or evening. But I think this operation is generally made more disagreeable than it may be from a mistaken idea that much heat is needed. I recollect noticing, some considerable time ago, a statement in a paper by Mr. Wilson, of Aberdeen, that he looked upon the varnishing of his negatives as one of the most disagreeable of his photographic operations. I think he ascribed this to the roasting he had to endure sometimes in accomplishing this very necessary but disagreeable duty. I believe, however, that this operation is often made more disagreeable than need be. Some few months ago I took to the varnishing of some negatives with shellac varnish in the cold state. I wanted to secure a matt semi-opaque surface for a double purpose. Some of these negatives I wanted to touch with the pencil; and some of them were so strong in the contrasts that I expected to soften them and make them more printable in this way. And here I may mention that I thought this class of negative considerably improved by this little dodge, for even in sunshine it is only diffused light that penetrates what would otherwise be clear glass and admit the direct ray. In fact, this appears to be a very simple and easy way of imitating the effects of ground glass, so much approved of by some lately. The opalescent varnish, of course, can be applied either to the back of the glass, or to the collodion film, as may be desired. But this only by the way. What I meant more particularly to call attention to was this, that on applying the cold varnish I found it more difficult to preserve it quite opalescent than I had expected. I found that a very small degree of heat indeed was sufficient to render it translucent; so much so, that at the corner where I held the glass in the act of varnishing, the mere heat of my fingers was sufficient to make it set and dry in a translucent and clear state, and, indeed, for about an inch upwards from the corner by which I held it. The consequence was, that I have since found the varnishing of negatives by this varnish not at all irksome. A very weak fire answers, and the work is better done, for it can be done deliberately and without hurry, and also without roasting the points of your fingers or bringing out the sweat on your brow. Indeed, I have found so much comfort in varnishing my negatives now, compared with my former method, that I have thought it worth communicating for the benefit of such as may still have the same notions on this matter as I once had myself. If photography is to be followed as a pleasure, we cannot be too careful in removing all the unnecessary disagreeables connected with it out of the way.

Bridgend, Perth, July, 1870.

PRINTING IN CARBON DESCRIBED IN TWO CHAPTERS.

BY W. T. BOVEY.

Chapter II.—Mr. Edwards's Photo-Mechanical Printing Process.

The copious extracts recently published in the News from an able and exhaustive report on photo-mechanical processes, compiled by Lieut. J. Waterhouse, render it unnecessary for me to review *in extenso* the numerous and varied operations of inventors who have essayed to find in printer's ink an effective substitute for silver. Judging from the report in question, it cannot be doubted that considerable skill and ingenuity have been expended in the researches; and it must be admitted that in some instances most promising results have been obtained, more especially when the subjects transferred to metal or stone were in line. But it would appear that when a photograph from nature has been the subject of experiment, partial or total failure was the general rule. The plain reason why of these ill successes may be briefly told, for the fact cannot be gainsaid that a photograph from nature is exceedingly unlike every other kind of pictorial production without marks to divide the blending of tones. No tracings show where the delicate half tints begin or shadows end; hence are found the chief difficulties when attempts are made to reproduce the delicacy and peculiarities of a photograph from an impression drawn on metal or stone. Certainly Col. James has succeeded in reproducing admirable transcripts in line, so also has Mr. Griggs, and I might name many others; but all have failed in their laudable efforts to produce a faithful picture from a negative of nature, and by nature drawn. Some time ago a process—designed, I believe, by Mr. Bullock, of Leamington—was seen to possess rich promise of future excellence, but extended efforts to produce half-tone, by breaking up the masses of black into irregular and grained divisions, were attended with a very partial degree of success. To M. Tessie de Motay, therefore, is the immediate honour due of entering on the right track. The virtue and failings of that gentleman's invention are matters of history, which need from my pen no reiteration; suffice it to observe, that it is a question of more than probability that from the invention of Tessie du Motay, M. Albert drew inspiration which led him finally to a glorious success. The ball set rolling in so promising a direction was readily caught up by Obernetter, Herring, Max Gemoser, and others, and the rival claims of M. Albert and the author of the barbarously-named "Lichtdruck" are subjects of comment on which the photographic journals are often wont to dwell. It is, however, none of my business to decide on the merits or demerits of any of the photo-mechanical processes designed by our prolific German brethren. Of one thing I feel assured, viz., that the published details of the inventions as presented by the disputing process-makers are falsely rendered, or, on the other hand, the working directions are painfully and unreasonably complicated.

Selecting M. Albert's invention as a type of the remaining continental processes, it is a fact undeniable that reliable authorities have repeatedly asserted that none but the inventor is able to print creditable pictures from the plates he produces. If such be the case, we, as English photographers, have much reason to rejoice that the matter is wrested from German courts, and to an Englishman is due the credit of having swept away the cobwebs of mystery, and on our own soil worked out a photo-mechanical process which is bereft of every unreasonable difficulty—a process that, in all its stages, is so simple of application, that anyone possessing moderate abilities can surely and speedily master the manipulations. Of that process I am about to write—briefly, of necessity; yet enough will be stated to show up the simplicity of the invention, and to open to view the wondrous field for its future application.

This way, if you please! The door is thrown open, and I introduce my reader into the small chamber in which the earliest stage of the photo-mechanical process is conducted. A deal bench occupies the space nearest the window; opposite the bench stands an ordinary looking stove, which is certainly undeserving of a mere passing notice, as my readers will probably recognize, by an extended description, a means of supplying a long-experienced want. The stove now under review is of cylinderical form, plain in appearance, decidedly more of use than ornament. I wish, however, to direct attention to the scientific construction of this interesting and creditable invention. The pipe from which the supply of gas is derived penetrates through the bottom of the cylinder, and terminates with a movable joint, to which is attached a burner, that is further connected with a narrow glass door. To ignite the gas this door is opened, when the burner is drawn into a convenient position for the ready ignition of the gas. At the back of the stove are fixed two pipes which lead into the chimney, passing, in their way thence, through apertures cut in a board that is secured airtight to the fireplace. The pipes are situate one at top the other at the bottom of the cylinder. The lower pipe supplies the food for combustion, the upper returns to the chimney the exhausted air that has been divested of its oxygen and is contaminated with the product of burning. So far we have a stove of the ordinary construction, which circulates heat by radiation. But the beauty of the invention remains to be explained. Through the floor at the bottom of the stove passes a sheet-iron air-pipe of wide aperture, which memory describes to be about three inches in diameter. This pipe is connected with and leads through an air-tight division in the stone interior, and finally projects its open mouth at an upper end of the cylinder. It may now be perceived that the heat generated by the gas speedily warms the air-chamber, and the warmth being communicated to the air it contains, rarifies, which causes it to ascend with a velocity that is, of course, regulated by the amount of heat. The delivery of the warm air from above is naturally accompanied with a hasty ascent of cold air from beneath, and thus is maintained a circulation of heat which speedily sends the quicksilver in the thermometer to register from 90° to 100° of warmth. No smell, no suffocating odours, but all is just as it should be—comfortable.

This interesting and useful invention is the design of a gentleman amateur mechanician named Mr. R. George, of 17, Oxford Road, Kilburn; and a tender interest, I must add, is connected with the invention. A beloved daughter, under symptoms of insidious consumption, droops; an anxious father, unable to send his child to a sunny clime, necessity, the mother of invention, inspires, and genius aids talent to construct the medium which finally proves a restorer of health and a harbinger of a prolonged existence. Here we turn our back on the object of our soliloquy, to watch the operations just commencing.

A square of plate glass, half an inch in thickness, made thoroughly clean in the usual way, is placed on a stand, and carefully adjusted with the aid of a spirit-level. A thick syrup-like solution, consisting of gelatine, chrome alum, and chromate of potash, is then poured on to the glass surface, until it receives as much of the solution as it can hold without spilling over the sides, when it is left undisturbed for some hours to dry, the heat being regulated to suit the stages of dryth. When thoroughly dry, the plate is ready for exposure. An ordinary printing-frame is used, and the exposure, which occupies about double the time needed for the ordinary tissue, is governed by the actinometer same as described in a former chapter. When the amount of exposure is judged sufficient, the plate is removed from the frame, and placed into water, from whence it may shortly be removed, and a "squeegee" is then drawn over the surface, which clearly shows up the perfections or deficiencies of the impressions, now clearly visible on the plate, which, it may be as well to observe, is coated once only, thus evidencing a first advantage over the German methods.

By the way, I must again stalk off in digression to renew attention to the curiously named "squeegee." In reference to this stranger "squeegee," the important work that simple instrument is designed to perform in connection with carbon printing, renders it imperative—oh me!—to pay it some small amount of attention. Who invented it? For aught I know, the honour of invention is due to the "ancient mariner." It is by no means impossible that when

> "The ship was cheered, the harbour cleared,
> Merrily did they drop,"
> The hands were set to cleanse the deck,
> With squeegee, broom, and mop.

At all events, *I know* that the "squeegee" has long been a nautical institution, which any mariner is capable of proving. Its impressment into photographic service, however, is unquestionably of recent date; and seeing that this "nobody's child," which promises to prove a valuable acquisition, knows no father, it would, perhaps, be as well, once and for all, to settle the question as to whom the credit of its adoption is due. There can be no doubt that Mr. Johnson, of the Autotype Company, first introduced the bantling to the photographic world; but Mr. Edwards claims the origin of the idea which led to its introduction into the society of carbon printers. Therefore, if I may decide on what is Cæsar's, I would advise a division of honours. The squeegee will prove more useful than the squbbling it may occasion, and photographers will by-and-bye discover its great value. I must pursue this topic of digression no further, as the plate, now ready for printing from, is being conveyed to the printing room, whither we must follow.

On entering the printing-room, we perceive four printing-presses (Messrs. Edwards and Co. have seven in full work), of the well-known form known as "the Albion vertical printing press." There is no complication or mystery in its construction: a movable bed, which is set in motion by turning a handle; a vellum shutter is attached to the bed by hinges; and a press movement, which is worked by an obliquely placed lever, producing the pressure. The glass plate is fixed in position on the movable bed, and printing operations commence. "A most complicated business," say you, reader? Nothing of the kind. Proof: I have sent to our esteemed Editor the product of my first trial at photo-mechanical printing, and have requested an opinion. I had only watched proceedings some five minutes, when, without assistance or instruction, I turned pressman, and followed up all the work requisite in the production of the proof. Our Editor must tell the rest.* The printing operations proceed as follows:—A soft hair-brush is charged with water and passed briskly, yet lightly, over the surface of the glass plate; our familiar friend the "squeegee" is then called into requisition to scrape off the superfluous fluid; a sheet of bibulous paper removes the moisture that escaped the "squeegee," and the plate is then ready for inking up. The rollers or dabbers employed in the inking operation are in form the same as those used in type-printing, but here the similarity ceases, for in lieu of glue the rollers found most suitable for the work I am describing are composed of india-rubber. The "dabber" being charged, with the assistance of a palette knife, with lithographic ink thinned with olive oil, is then passed sharply over a sheet of zinc, which does duty as an inking slab, until a thin and even layer of ink is spread over the entire surface of the roller. The inking-up is now proceeded with by passing the dabber over the glass plate from side to side, then from end to end. When sufficient ink has been taken up by the plate, the paper intended to receive the impression is laid carefully on the inked portion of the plate. (If a clear and clean margin s required, a sheet of paper with an aperture the desired size and shape is adjusted to the plate previous to the operation just described being performed); a padding of felt or paper is placed over the sheet, and the whole is covered with a piece of sheet india-rubber. The vellum shutter is at once shut down. The handle moved around places the bed in position; a smart pull at the lever brings the press down; another turn at the handle; the paddings are removed, and a careful removal of the sheet that remains adhering to the glass plate reveals an exquisitely finished picture, that vies in sharpness with a good engraving. And the operations, as I have described them, might be repeated again and again some hundreds of times without any deterioration in the quality of the impression from which the proofs are printed.

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* The impression forwarded is an exceedingly perfect reproduction of an engraving.—Ed

As I have described them, such were the operations I conducted when trying my 'prentice hand on press-printing. There are, however, other details which remain to be noticed. It sometimes happens (more especially when the subject printed is from a negative of a subject direct from nature) that the inking conditions which produce vigorous shadows are incapable of rendering the delicate half-tones. To meet this difficulty the means of production are most simple and ngeniously devised. First, the shadow parts of the plate are inked up with an ink possessing the maximum of density. In that state all but the shadow parts of the plate refuse the nk. The printer at this stage lays aside the dabber, and exchanges for one charged with a much thinner kind of ink. On applying this second roller to the plate a curious metamorphosis occurs. The delicate half-tones, which the thicker nk passed over, grow rapidly under the moving roller. Advantage is taken of these varying adhesive properties to work up a picture in inks of different hue. Thus, a print n black is glazed with a warmer tint, which imparts to the picture a transparent and charming finish. Can this be Albert's secret? If so, his secretiveness has robbed him of he credit which might have been his—a credit made the more evident when it is seen that on so simple a matter as he second inking rests the success in printing pictures that pring from pure photography.

In conclusion, I would add a word on the boundless prospects the new invention opens up for photography. Regarded as a saver of cost. The print to which I have several imes alluded is a reduced copy of a fine line engraving. Supposing it possible (which I much doubt) for a skilful ngraver to execute the work in lines of equal fineness: what would be the cost of the plate? Why, £200 at the owest estimate. The photo prepared plate cost not half as many farthings. Again, regarded as a saver of time. To ngrave the plate would occupy the engraver during many months. By photographic means the plate can be prepared, and one hundred copies struck from it, in a day. From these tatements some idea of the value of a successful photo-mechanical process can be obtained. Whilst considering hese matters, visions of the future bewilder by the vastness of the prospects they unfold. In fancy I see dinner and tea ervices studded with photographically produced pictures and designs. I can see the museums disgorging their riches and spreading, by facsimiles, the rare and beautiful of form before the poorest of the land. Artists, no longer dependent on engraving, perpetuating and multiplying their works by the aid derived from photography. But prudence bids me stop. In the interest of the readers of the News I shall watch the development of the process I have described, and I hope that soon I shall be in possession of information which will enable me to communicate that the process is within reach of every photographer who can command the few pounds requisite for the purchase of instruction and tools.

SELECTING AND PREPARING GLASS FOR NEGATIVES.

An instructive and entertaining series of papers have recently been issued in our Philadelphia contemporary, entitled "One Hundred Days in a Fog," written by Mr. Elbert Anderson, operator to Mr. Kurtz, of New York. The fog in question was supposed to be in the mind of a photographic novice, who had been studying various photographic authorities, and was bewildered by the contradictory instructions placed on record. In a recent paper Mr. Anderson and his bewildered novice, who has been corresponding with him, meet personally, and a conversation on selecting and cleaning glass ensues, from which we quote. Mr. Marshall, the novice, is speaking. He says:—

I presume you employ only the finest plate-glass; you must, of course. to produce such delicate results.

Mr. Anderson. There you are mistaken. We use the ordinary photographic glass; that is, a better kind of common window-glass—supposed to be flat and not *curved* (which it is), and to be free from bubbles and scratches (which it isn't). The price of this glass at any of our stock-houses, for "four-fourth" (6½ inches by 8½ inches), is five dollars per box of one hundred and thirty pieces. I never file, grind, or scrape off the edges, not seeing the least necessity for so doing. You know what Mrs. Jellyby says: "You may go into Holborn, without precaution, and be run over. You may go into Holborn, with precaution, and never be run over. Just so with with Africa," or *glass* rather. With precaution you will never cut you fingers. You may as well be afraid of cutting your throat whilst shaving.

Mr. M. Is not this kind of glass very difficult to clean and polish? I should think it would take one man to do nothing else all day long, and a smart man at that.

Mr. A. Nonsense! my boy Charley prepares from seventy to eighty plates every evening, between the hours of five and six, for the next day's work.

Mr. M. Why, I should think it would require at least five minutes to polish *one* piece *properly*.

Mr. A. Polish! possibly; I said nothing of polishing. Have you ever heard of *albuminizing* the glass?

Mr. M. Oh yes, but *that* won't do; it ruins your bath, you know.

Mr. A. Pray, Mr. Marshall, who told you that albuminizing the glass ruined the bath?

Mr. M. Why, everybody, you know; they say that—what You don't mean to say, eh?

Mr. A. Certainly; every piece of glass I have ever used was albuminized.

Mr. M. And it don't put your bath out of order?

Mr. A. I have never yet discovered that it has the slighest effect on my bath.

Mr. M. Indeed! What do you consider the advantages of albuminizing the glass?

Mr. A. The advantages are very great indeed. *First*, it saves a very great deal of *real hard work* in cleaning and polishing plate-glass, which (second) is very expensive. Third, the troublesome and disagreeable business of grinding or scraping the edges (to say nothing of the time involved), in order to get the collodion film to adhere, is also dispensed with. I have never lost a single film during my entire practice. Fourth, you are always certain of a perfectly clean plate; and fifth, it can be prepared in any quantity, and is always ready for instant use. There! so much for albuminizing glass.

Mr. M, Do I understand you, then, that you consider this glass, so prepared, equal in every respect to the best polished plate for negatives?

Mr. A. Certainly not. One would suppose you to be "the party of the name of Reynolds," you jump so to conclusions. I consider nothing of the sort. Where we have to make from sixty to seventy negatives a day, the expense and labour saved before mentioned are immense, and this kind of glass answers every purpose for our ordinary portrait work. But when you come to special negatives of prize pictures, copies of works of art, penmanship, maps, plans, etc., I assuredly recommend plate-glass. Even *this* I should albuminize.

Mr. M. Isn't this, as it were, painting the lily—gilding refined gold?

Mr. A. No, sir; you cannot possibly do any harm; you are absolutely sure of a clean plate in the first place, and your film is fully insured in the second place.

Mr. M. What is your method of preparing your plates?

Mr. A. Provide two large stone pots, each capable of containing the necessary number of plates required. Into one put a solution of hydrate of potash in water.

Mr. M. Is there any *civilized* name for hydrate of potash?

Mr. A. Its *foreign* name, if you like, is protoxyd of potassium. You will excuse my going into the chemistry of potassium at present. Ask your grocer for a one-pound can of concentrated potash. Dissolve this in one gallon of water. In the other pot put undiluted commercial nitric acid. New glass as it is taken from the box is not generally soiled with grease nor dirty fingers; it is first lightly washed under the tap to free it from the straw and dirt of the box, and then placed side by side, *one piece at a time* (this is all important, that the solution may gain free access to all parts of its surface), in the acid pot, where it may remain for any convenient length of time. Old negatives which are not required to be kept are placed side by side, one at a time, in the potash pot. After the negatives have remained in this solution all night, they are washed under the tap with a piece of Canton flannel, when every trace of old film, grease, dirt, etc., is instantly removed as if by magic. These then, like new glass, are now ready for the acid pot. And thus you "keep the pots a-biling."

Mr. M. What is the rationale of this potash and acid business?

Mr A. I am really pleased to find you in this inquiring frame of mind; for a proper understanding at the outset of the "*reasons why*" is of the first importance, and may save you the mortification of many a future failure. The detergent or cleansing action of soap, for instance, depends entirely upon its alkaline constituents. Water alone, by reason of its total want of *affinity* for all fatty, greasy, or oily substances, is unable to dissolve them; but when soap is dissolved in water, a portion of its alkali is set free (by the substitution of water as a base) and, uniting with the impurities to be removed, partially *saponifies* them, thus rendering them soluble in water. Now, hydrate of potash in solution possesses the properties termed alkaline in the very highest degree, and quickly destroys both animal and vegetable matter; in fact, so strong is its solution, that it cannot be filtered except through pounded glass or sand. Glass is a compound produced by fusing together the silicates of potash, lime, soda, magnesia, alumina, etc., etc; and *new* glass is frequently spotted on its surface with small gritty particles, which consist of carbonate of lime, soda, etc. *These* are *not* removed by the action of the potash, but are readily dissolved by the acid.

Mr. M. I am obliged to you.

Mr. A The glass is taken from the acid and washed on a board, under the tap, with a piece of Canton flannel, and can be either albuminized at once, or kept in a suitable vessel, *under water*, until you are ready to albuminize. Be careful in both cases that the acid and potash entirely cover the glass, else it will be almost sure to leave a line where the surface of the liquid touched the glass.

Mr. M. How is the albumen prepared?

Mr. A. The albumen is prepared as follows:—Into a 64-ounce bottle, never used for any other purpose—I may as well mention here, "once for all," as Fanny Dorrit says, that I have pestles and mortars, graduates, funnels, bottles, etc., etc., which I only use each for a special purpose, hence avoiding all possibility of contamination—well, then, into a 64-ounce bottle, containing half a handful of broken bits of glass, put the white of one egg and 28 to 30 ounces of water, which is sufficient to albuminize 150 plates, and shake well for eight or ten minutes. The broken bits of glass "cut up" the albumen, thus causing it to dissolve more [illegible] upside down, un[illegible] The cork being [illegible] into a funnel tur[illegible] maining behind in the bottle. The whole operation occupies about fifteen or twenty minutes. When filtered it should look perfectly clear like water.

Mr. M. It strikes me you are a little indefinite here. You say the white of *one* egg; consider, sir, *all* eggs are not of a size.

Mr. A. But very few eggs contain more than one ounce of albumen,—mark you, I mean hen's eggs, not ostrich's eggs,—and the amount of water mentioned is the minimum, for you may increase it to thirty-five ounces of water for very large eggs.

Mr. M. Do you not use ammonia, as I see recommended by the *great Moguls?*

Mr. A. The addition of ammonia to albumen is said to render it more fluid, and to preserve it "sweet." Where it is desirable to prepare albumen in stock—say half and half—this may be very proper; but as I make it fresh every day, I have no occasion to contaminate it with useless foreign substances. When ready to albuminize, you will notice, by holding the edge of the plate to your eye, that it is generally slightly curved, and it is *always* on the concave or hollow side that the albumen is to be applied.

Mr. M. Why so?

Mr. A. If you coated the convex side, your plate would come a little out of focus, the centre of the plate coming nearer the lens, and the spring at the back of the plate-holder would tend to still further increase the error; whereas the opposite result obtains in the other case. Allow the water from the tap to flow on both sides of the plate, rubbing the glass gently with the fingers to insure the wetting of all the surface. Let the water run off at one corner until it ceases to drop. The albumen is now poured on (while the plate is still wet, of course) from an eight-ounce graduate half full. The under edge of the lip of the graduate must be lightly rubbed with tallow, which prevents the albumen from running down the side by capillary attraction. Bring the lip down so as to nearly touch the surface of the glass, to avoid the formation of bubbles, and pour on about a teaspoonful. As you do so, you will plainly see the albumen driving the water before it. Tilt the plate until its surface is carefully covered, and suffer the surplus to run off at one corner into the sink. The plate is now placed on a rack (used for no other purpose) in a room free from dust. I do this in my dark room. Cover them with a light paper cover, and in the morning they are put into a grooved box furnished with a cover. It is well to put them with the albumen sides all in the same direction, as it is impossible to tell by the eye which side is albuminized. Should any doubt occur, however, you have only to breathe on the surface of the glass, the breath remaining a moment on the bare glass, and scarcely an instant on the albuminized side.

Now, sir, if you will honour me with your attention to-morrow evening, the next subject in order will be

The Mysteries of Collodion.

And so, good night to you!

Mr. M. By-the-by, one word before I go. I wish to ask you a very material question. I now quote from a letter of yours: "I cannot, for an instant, harbour the thought that any of these gentlemen wrote what he knew to be false, nor will I accept the other alternative, that he wrote in deplorable ignorance on the subject." If so, how do you reconcile such contradictions as the following? For instance: "*Thirty-second day.* Always filter your bath after each day's work."—(*E. L. Wilson, Mosaics*, 1867, *page* 141). "*Thirty-third day.* Neither should the bath be filtered after it has once been put into use."—*Devine's Practice*, *page* 36). One *must* be wrong, you know.

Mr. A. You will excuse me, Mr. Marshall, but I *don't* know anything of the sort. Now let us understand, in the first place, what was intended in the "fog papers." Mr. G. Wharton Simpson, the very able correspondent of the *Philadelphia Photographer*, "hits the nail exactly on the head" when he says, in a very few common sense words, the following:—"Whilst, however, it must be conceded that in matters of practice authorities may reasonably differ *without either being absolutely wrong* (the italics are mine), the careful student will quickly discover the source of the mental fog which his brother novice's diary presents. . . . It would not be difficult to rmonize the greater portion ot, if not all, the contradictory sagos quoted.

Ir Anderson doubtless intends the reader to make for himself the y obvious reflections on the importance of studying each process as entirety, remembering that disjointed formulæ, not duly related ll their parts, will generally bring failure, etc.

Iere's the whole thing "in a nutshell." Now I will take r own examples just quotod.

st. Filtor your bath every evening.

nd. Do not filter your bath, etc., etc.

Suppose you have a bath containing from four to five gallons, perfect order, and during the day you have dipped three or r plates; think, Mr. Marshall, what an absurdity it would to filter the bath, thero being not the slightest occasion refor. But, on the other hand, suppose your bath to contain y a halt gallon of solution, and you have dipped fifty plates; chances aro you have reduced your bath at least twenty- per cent. in strength, and charged it with alcohol and er and many other foul matters. It may now require not y filtering, but strengthening and boiling, etc., etc. Thus see how ono may contradict the other, and yet both be fectly right; it all depends upon tho circumstances immetely connected with the case.

SUN-PICTURES WITHOUT A CAMERA.

OSE of our readers who devote themselves to the protion of sun-pictures by means of camera and lens will, bably, feel interested in the examination of some very phic sketches by the *Rambler* of the *Sunday Times*, who nounces to his readers that he intends to devote a rtion of his time to the production of sun-pictures. e scenes chosen are so bright and refreshing, and they rendered with such a light, delicate, true touch, our ders will, we are sure, thank us for reproducing some *Rambler's* pictures. He says:—

think "sun-pictures" a capital idea, and I intend to make t of money over it. So tremble Mr. Valentine Blanchard, ke in your shoes Mr. Samuel Walker, coat yourself over h collodion Mr. Mayall, drown yourself in nitrate ot silver . Charles Watkins, swallow your lenses Messrs. Elliott and , asphyxiate yourselves in your dark room Messrs. Hills and unders, and let the whole race of photographers howl and be ceeding sad; for I intend to do my pictures very cheap leed, and to knock the Autotypo Company off the field altoher, and cause tho Stereoscopic Company to put up their tters speedily. I daresay they will all laugh at me and jeer my little gallery, but no matter. I intend to go on bravely. m my owu oporator, colourer, mounter, framer, and doorsn. I conduct my business on such economic principles that ee no reason why I should not succeed. But, after all, why uld I have flung down tho gauntlot in that jeering fashion tho army of estimable photographers? What do I know of eveloping" or "exciting," of "hypo-baths" and "albumin- l paper"? My mission is simply to reproduce on paper tain pictures which are at this moment reflected on the nera of my brain, and which have occurred by an "instaueous process," by reason of the solar rays piercing my bre chamber. Here, then, is number one of my series.

Iooning in the sunshine on the little pier at Bellagio, on the e of Como, smoking a languid cigarette and waiting for the amer. A small crowd of people are collected, endeavouring be busy in a languid sort of way. The little omnibus from Hotel Grande Bretagne rattles down with a tremendous tle and clatter; it is followed by the luggage truck from Albergo Genazanin, lugged by a concourse of small boys. o *carabinieri*, who try to look fierce and grow mustachios, who cannot succeed in either attempt, turn out to keep er. The picturesque, comical, grey-haired priest, with wellpen legs, comes down for no purpose whatever, unless it is give the steamer his benediction when it arrives. To the of him you may observo the red-faced, seedy-looking lady black with an impossible cap and a drab parasol, who looks though many seasons of seeing boats in, or copious libations brandy-aud-water, or porhaps both, had been too much for r complexion. There are the threo big girls with good eyes, tly braided hair, short frocks and voluminous white trousers, sing one another, climbing along the wall and romping in a nner that only short frocks and voluminous whito trousers can justify, and thero is the crusty resident English clergyman with his patient, much-enduring wife. . . . What a time tho *Unione* seems coming, and how languidly tho smoke creeps from its funnol, and how deliberate are the revolutions of its paddle wheels! At last it arrives, and we manage to drift on board by means of the pressure of the crowd. . . . We go as far as Colico in the brilliant sunshine. Colico is about the most uninteresting town in the world: it is damp, aguish, malarious. There is nothing whatever to see: so we take the return steamer, sit under the awning, and have a capital luncheon. Excellent bread and cheese, clusters of grapes, peaches, and nectarines, washed down with *vino d'Astispumante.* By no means a bad lunch. And then, afterwards, it is delicious to take a dozy pipe, with your toes in the sunshine and your head beneath the awning, and be lulled to sleep by the languid beat of the lazy paddle wheels. We get back to Bellagio just as tho sun is setting and diffusing a glory like unto molten gold over the rippleless waters. There, now, that is something like a sunshine picture, is it not? Let mo take a fresh plate, let me poke my hoad into the black bag, let me focus my camera, and see if I cannot turn out something else that you will like.

Here it is! Though I make a rule never to show negatives, I do not mind making an exception on this especial occasion. Sunshine in Florence is something liko sunshine. We have had our breakfast, and darling little red-lipped Rosina has brought us our dainty little bouquet: we make our way towards the Via Maggio, keeping on the shady sido of the street when we can, to call on an old friend. Our friend is in, and we all depart to Tantardini's to be shaved. The sun seems to have pierced through the innermost recesses of Tantardini's shopy and we find it tremendously hot. We cool ourselves be munching peaches in the old market and taking a stroll in th- Duomo. We then trudge off through tho Porta a Pinti, determining to reach Fiesol if the heat is not too much for us. . The old Etruscan walls, and the modern theatre, the Teatro Spence, are the lions of the place. The Etruscan walls are about as uninteresting as Etruscan walls generally are and as Roman amphitheatres always are, but the scene from them of Florence, of Firenze la Bella basking and winking in the sunshino, is something superb. Let us get into the shade, and let us ask permission to go over Mrs. Spence's charming little theatre. We cross the road from sunshine to shadow—I am very sorry, ladies and gentlemen, but the collodion has ontirely peeled off one corner of the plate, and I cannot show you any more of this Italian sun-picture. Let me try a smaller plate, and see if I can succeed better.

On the Thames, a lovely evening in June, with the sunshine pervading everything. It is wonderfully hot, and I am lazily pulling the lightest of outriggers over tho water. I have nothing on but a straw hat, a pair of white flannel trousers, and a rowing zephyr. My face and hands and arms are as brown as mahogany. I think I will get out of the stream and try and cool mysolf in the back waters, so I pull round under the shadow of tall scarce nodding rushes. I meander about under the shade of willows, and run my boat's nose into the cool verdure of gigantic dock leaves. I paddle over water-lilies, and hear them scroop as my light craft glides over them. I cool myself with listening to the swirl and trickle of the stream. I look down and I see the long sinuous hanks of weed trembling and waving in its pellucid depths. Then I see bright pebbles a fretting of the surface of the water; I come to a stop, and my boat, which only draws an inch or two of water, is at a standstill. I am agronnd. Yes, aground in a littlo bit of a stream that would scarcely suffice to float a toy ship. It is a long way to pull back, and I know it I can only get past this corner there is plenty of deep water beyond. I take off my boots and socks, turn up my trousers, and jump into the water. The stream ripples deliciously cool round my legs, and I stand there tor some minutes with the setting sun staring me in the face. I lift my craft over, and, by a series of most unaccountable gymnastics, manage to get in without upsetting her. The sun sinks behind the rows of motionless poplars, and I pull quietly homo in tho cool twilight.

Another view I am winding in the brawling old Wutach in the Schwarzwald, and it is hotter than usual. I have my fly-rod in my hand, and have been flogging the stream for hours to little purpose. I have had an unusually unsuccessful afternoon, and thence wandered to a part of tho stream with which I am not familiar. My eyes are getting quite dazzled with watching my "coachman" flirting with tho stream, and

I find I am almost up to my waist in the water. I see a likely ripple a little lower down, and I think I should like to throw a fly over it. The water is deeper, and I discover that I am wading on large boulders and bits of rock instead of the legitimate bottom of the stream. No matter, I feel certain I shall "bag" a trout at this corner. I throw my fly very carefully once or twice, but do not bring it down on the particular spot I mean to. I stretch my arm out to the utmost in my third throw; I lean forward and rather over-balance myself; I put out my right foot to save myself, but, unfortunately, it goes between the boulders instead of on to a neighbouring rock. I go head over heels, get a thorough ducking, and am whirled away in the swift stream, bumped against rocks, and barked by sharp-pointed stones. At last I am borne round where the stream takes a sharp eddy; I clutch violently at some drooping branches, and manage to scramble out. I sit down on the bank and take a little flask of *Kirchwasser* out of my dripping pocket and have a pull at it. I do not feel a bit chilled. I take off my jacket and sit in the glorious sunshine and try to see if I can by any chance mend my broken tackle. I find it it is of no use. Luckily I have discovered one or two dry *allumettes* in my waistcoat pocket; with some difficulty I kindle a damp pipe, and walk briskly away dripping to Stuhlingen, and arrive there just in time to change my damp garments before dinner.

Another study. A bright Sunday morning. A quaint little country church, with the golden corn waving on one side and the sheeny sea sparkling on the other. An English landscape and a balmy breeze. The little church is very full and I am rather late. I frequently am late at church. You see I strolled across the fields with *Someone*; we talked a good deal by the way, and gathered wild flowers. I do not like to disturb a congregation, therefore we do not go in; we take our seats in the grey, lichen-covered porch. *Someone* is sitting opposite to me; she has put some of the wild flowers in her prayer-book, a few are in her hand, a red poppy has dropped at her feet, which gives wonderful value in the cool shadows cast by her white dress. She is trying to look serious. How bonny she looks in her little straw hat and muslin *fichu*. How sunshiny she looks, and how those marvellous brown eyes seem to sparkle in the shade of the little porch. We listen to the hymn quaintly crooned by the village choir, and the ready voluntary of the organ played in a sad minor key. *Someone* is looking very serious. How elegantly is she posed, and how charmingly do the lines of her soft white drapery adapt themselves to her girlish figure. Presently there is a stir in the church, some hymn-books are knocked down, and an organ-stop squeaks in an inopportune manner. "And now unto——." This sun-picture, ladies and gentlemen, is scarcely sufficiently developed yet, but I fancy it will be a very good one when it is perfected.

There, now! My exhibition of sun pictures is opened. Admittance twopence, including catalogue. Art critics are not admitted. Photographers will be expected to find sureties to a heavy amount that they may keep the peace. Special arrangements may be made with regard to the admission of young ladies' schools. Fine art prancers will be rigidly excluded, and all babies found in the neighbourhood will be confiscated and sold to defray expenses. Tantarra, tantarra, tantarra! I am graciously pleased to declare the exhibition of sun-pictures is opened. *Vivat Regina.* No money returned. Places may be booked five years in advance. No fees to box-keepers. The present proprietor never performs out of London. Hip, hip, hooray!

APPLICATION OF PHOTOGRAPHY TO THE PRODUCTION OF MAPS.

BY LIEUT. J. WATERHOUSE, R.A.

THE following is Lieut. Waterhouse's *resumé* of the extent to which photography and photographic printing processes are used for cartographic purposes in Europe generally:—

"*Photography.*—Photography is not very extensively used for reductions where perfect accuracy is required; moreover, the original drawings are very seldom suitable for reproduction in this manner; but its principal use is in making copies for the use of the engravers as guides for copying the hill shading, the outline being drawn by means of the pantograph. It is extensively used for making copies of maps for tempc [illegible] applied as an [illegible] success. A ver [illegible] graphic printin [illegible] Belgian Topographical Department, where it is very much used, as well as at Paris.

"*Photo-lithography.*—Photo-lithography is not as yet very extensively employed for the reproduction of maps. It is used in Prussia to some extent, but not in a government establishment, and also in Austria and Bavaria. In Belgium, however, considerable use is made of it, the map, upon a scale of 1 : 20,000, being produced in this manner; and this is the only instance in which it has been really applied to the production of a series of maps of a country.

"The causes which have operated against its more extensive introduction are the uncertainty of exactly preserving the scale through the numerous washings and pressings the prints have to undergo, and the difficulties in manipulating so as to produce fine, sharp work, and avoid a heavy and generally woolly appearance. The finest and most accurate work is produced by working direct on the stone, but this limits the application of the process to maps of comparatively small size. Taking all things into consideration, I am disposed to think that the process used at Southampton is the best hitherto published for the reproduction of maps, &c., of large size; but for fine, delicate work, of moderate dimensions, it is probably that Toovey's or some of the asphaltum processes will be found better.

"Photo-zincography was not used at all in any of the institutions I visited.

"Photo-lithography, applied to the reproduction of drawings and photographs from nature, has been brought to great perfection, and, as a rule, the results far surpass anything of the kind done in England. In this respect the processes of Marie, Toovey, Korn, Kellner, Leth, and Reiffenstein leave little to be desired.

"Notwithstanding the success which has already been attained in reproducing subjects in half tone, the processes which succeed best are extremely difficult and uncertain, and require a great amount of skill and experience on the part of the operator. A means of producing better results with more certainty and less expenditure of labour is still a great desideratum.

"The phototype process of Tessie du Mothay and Maréchal fulfils these requirements in an eminent degree, but labours under the great disadvantage that only a very limited number of impressions can be obtained from one plate. If a means could be found of successfully transferring such phototypes to stone, and thus obtaining an image capable of giving some thousands of impressions, the problem would be completely solved.*

"*Photo-engraving.*—The process of photo-engraving is not as yet used to any extent for reproductions of maps; several essays have, however, been made with more or less success, and there is little doubt that this process can render the greatest services in this respect, and that before long it will be extensively used. Some specimens I saw at Berlin and Paris could scarcely be surpassed in delicacy and distinctness. The advantages of photo-engraving over photo-lithography, as a means of reproducing maps, are the superior accuracy and the power of obtaining finer and far more delicate results. At the same time, its application is limited to work of moderate size, and the printing requires more time and care. The process is not very expensive to work, though naturally more so than photo-lithography; its use will, therefore, be restricted to reproductions of a high class. This process has been applied to fine art reproductions with the greatest success. For reproductions in line the processes of Armand Durand, Baldus, Garnier, and the oyal Printing Office, Berlin, leave nothing to be desired; hile in half tones the processes of Placct, Garnier, and rivet, of Paris, have yielded fine results, those of the two st being almost perfect.

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* I have lately seen some specimens of photo-lithography in half tones, executed by Mr. Fruwirth, of Norwood, which surpass most of the continental specimens in that style, but are not quite equal to the results of Tessie du Mothay's process. I believe they are obtained by a somewhat similar method.

"From what I have seen of the various processes, I am opinion that, for reproductions in line, the asphaltum ocesses give the best results, and of these I can confidently commend the Berlin process; while for half tone work e best results are obtained by the use of bichromated gelae, either by swelling it and taking a cast of the film, or rendering it less impervious to acid solutions and then ing in through it. At present these processes are very tle practised out of Paris; Berlin is the only other city which I saw anything of the kind.*

"*Application of Photography to Surveying.*—Though ays have been made to apply photography to surveying some years past, the subject has not received the attenn it deserves. It has been taken up to some extent by the euch and Prussian governments, but no regular use is ade of it. The existing methods have been described as lly as possible in this report, and it is hoped that the ention of those competent to judge of its merits may be awn to the subject."

Correspondence.

COST OF PATENTED APPARATUS.

Sir,—When I addressed you upon the above subject a short e ago, my remarks were induced by and levelled more at . Edwards and his charges for his patent frames and licence, n at Mr. Hart, whose pavilion I unfortunately coupled with em as another instance of high charges. I am sorry to find . Hart is rather sore at being thus included; and, although m quite the reverse of being "great at figures," I have done little sum, and find, to my astonishment, that the amount nes to £9 18s. 2d., leaving only a profit of 1s. 10d., supposing price to be £10. Why Mr. Hart should question my having n asked £10 for one I am at a loss to understand; and, to ng the matter to his recollection and to figures (which I ain protest I am not "great at") I make this statement:—

Mr. Hart told me the cost was £9 15s. for a pavilion of the lowing dimensions: 15 by 8, and 10 feet to eaves, the weight which would be about 1½ cwt. I made a note of it at the ne for the benefit of an amateur friend who will probably have e.

Mr. Hart evades the question, what it is that he *does* patent register; and, in reply to his concluding remark, I tell Mr. rt that if I can invent a plan to work without (say) Edwards' gh-priced frames, I shall do so; and although I may, to a tain extent, evade his (Edwards') patent, I shall not, theree, appropriate his ideas any more than Edwards appropriates ideas of others with regard to composition printing.—I am, your obedient servant, Ingenio.

July 9th, 1870.

WATER FOR PRINTING BATH.

Dear Sir,—I have been making my baths for sensitizing er with water that I have washed my prints in previous to ing. My bath has not discoloured. It remains as clear as tilled water. I make the bath when the chlorido of silver gone down, from putting the washings in daylight.—I am r sir, faithfully yours, Aaron Vammer.

FLAT BATHS FOR NEGATIVES.

Sir,—No horizontal bath with a well is made larger than by 12. Can you or any correspondent tell me how or where get one made for large plates to be sensitized in?

W. W.

We have recently seen very large flat dishes in use for sitizing large plates. The dishes were without wells, but ficiently deep to permit tilting without spilling the solution. Some time ago we remember seeing a very large cradle bath which had been made for plates four feet long or thereabouts. It was seventy-two inches long by forty-two inches wide, and ten inches deep. The framework was mahogany, with a lining of plate glass carefully cemented in. The bottom was not flat, but bent so as to form a very obtuse angle, about fifty inches of the length being at one side of the angle and twenty-two inches at the other. The whole was suspended on a cradle framework, which permitted the bath to be easily tilted, by which operation all the solution was thrown into the short end, whilst the plate was laid flat on the other; when a reverse tilt brought the solution in one wave over the plate. We presume that any manufacturer of apparatus would undertake to make such bath to order. Can any correspondent give information as to the existence of anything of the kind?—Ed.]

PHOTO-GALVANOGRAPHIC COMPANY.

Sir,—Mr. Dallas objects to our statement (Photo. News 8th July) that "previous to our accepting office under the Photo-galvanographic Company we had *his* assurance that the Pretsch process was a workable one." We have no objection to retract this expression; for, fifteen years having elapsed since the time referred to, it is quite possible we may be somewhat in error in stating so positively that we had that assurance. Of this, however, we are quite confident: that, whatever was then said or done, the impression left upon our minds was that the so-called "invention" was a "workable one," or we most certainly should not have had anything to do with it.—Yours respectfully,

Walter Petty.
F. Ewbank Leefe.

FLAT *VERSUS* VERTICAL BATHS.

My Dear Sir,—Your remarks on the use of flat baths on the Continent remind me of visits I paid to many dealers in photographic apparatus and photographers' studios at and near Geneva, in the hope of being able to replace a twelve by ten bath broken in the mountains. Nearly all the photographers to whom I went had never heard of our English form of bath and, after spending several days in vain, I was compelled to telegraph to London. I then resolved never to travel again without an extra bath, which takes up but little room in a portmanteau. The accident and consequent delay were annoying, but I gained experience of the ordinary mode of exciting plates among continental photographers; I can therefore endorse your remarks as far as studio work is concerned. For out-door work in the box-tents now so generally used, the vertical bath has great advantages over the flat dish; it takes up scarcely any of the working space, which is necessarily limited; it is protected by its position from dust, and the introduction of chemicals; the bath solution can be carried in the bath; if a flat dish were used, a large extra bottle for the bath must be included in the already troublesome impedimenta. For these reason the use of the vertical bath will, I think, continue for out-door photography, but for home work there is no reasons why the flat dish, possessing many advantages, should not come into use.—I am, &c., Oxoniensis.

Talk in the Studio.

Obernetter's Photo-Collographic Process.—We understand that Herr Obernetter has not got his new printing process into practical operation. He has already three presses fully at work, and hopes shortly to have a dozen in full operation.

Laboratory Accident.—It appears that a pupil of the School of Pharmacy, namod Troncay, was engaged in heating, in a glass tube, a solution of hyposulphite of soda mixed with nitric acid. While trying to smell, at the mouth of the tube, the odour of the sulphurous acid given off, a sudden ebullition of the liquid took place; as a consequence of which, the contents of the tube were forced out at its open end, with the sad result of seriously burning the eyes of the young man occupied with the experiment. Notwithstanding the immediate aid given by a medical man who happened to be at the school at the time, the young man has lost his eyesight.

I may mention here that when visiting Messrs. Nelson's printing ce at Edinburgh, Mr. Ramage, of that firm, showed me some exceedingly specimens of photographic engravings *in relief* suitable for printing in typographic press, which, for sharpness and delicacy, surpassed anyng I saw on the Continent!

Pitiful Photographs.—Mr. H. J. Daniel, a Cornish poet, contributes the following to a local paper, the *Western Daily Mercury* :—

I've smiled (it might be with contempt—
From such a feeling quite exempt
I am no more than others),
Some photographs I've smiled to see,
And wondered at the vanity
Of many human brothers—

Through life obscure, without a claim
To wit, to virtue, or to fame,
Men multiply their features,
As if the world could ne'er jog on
Were some dull vacant vision gone,
The poor deluded creatures!

Here Miss Fantastic sits arrayed
In shimmering silk or rich brocade,
With dangling chain and locket;
And there a youth, ill-taught, ill-bred,
With very little in his head,
And less within his pocket.

Here some old lady, seventy past,
Still following fashion to the last,
Displays her faded beauty.
There some policeman, black, not blue,
Stands stiffly up before your view,
As if he were on duty.

Here, on its doting mother's lap,
A baby, hardly weaned from pap,
All eyes and mouth, is lying;
There, pale and thin, and off his feed,
Behold a wretched invalid,
Just one remove from dying.

Here, rough and ready from the plough,
See sturdy Giles, with bovine brow
And unkempt hair in tangles;
And there a washerwoman stands
With vulgar face, and clumsy hands
That should be turning mangles.

Here one who teaches, Heaven knows what,
And yet methinks he knoweth not
A comma from a colon;
His hand upon a heap of books—
In studied attitude he looks
A Solomon or Solon.

See shoals from haberdashers' shops,
The GENUS gent, a race of fops,
In every style apparell'd;
To count them were a futile task,
As thick as pilchards in a cask
Or oysters bagg'd or barrell'd.

The thoughtful few, with minds endowed,
Above and separate from the crowd,
Are light, though dark they found us.
Long may the light THEIR features limn,
For like the sun that ne'er grows dim,
Their glory shines around us.

Did the resplendent sun but know
How men have used his beams below,
He'd certainly endeavour
To curb their impudence at least,
And rise no longer in the East,
But hide his head for ever.

To Correspondents.

G. H.—If you read carefully the paper of Mr. McLachlan you will find that he lays great stress upon harmony of conditions; and when he employs a commercial sample of collodion he adds to it a few drops of a one-grain solution of caustic potash, in order to secure a neutral or slightly alkaline reaction.

D. Welch.—So far as we know, the person about whom you enquire is still at his address—a little dilatory and irregular in habit, but otherwise trustworthy, we believe. This is the information we receive from our Publisher.

A Subscriber.—A good portrait lens, stopped down, will answer well. We cannot indicate any by name here, but if you send a list, attaching a letter or figure to each one, we can tell you which we think best.

A Constant Reader.—You can take the pictures in question without any risk whatever.

John R. Kirk.—We have not received your negatives, but have received a communication from the Post Office at Liverpool, stating that a packet addressed to us containing glass is detained as violating the rules of the Office, which may be obtained upon personal application. From the description you give, however, of the film partially dissolving and running when varnished, we are tolerably familiar with the defect mentioned. It arises from two causes, but is chiefly due to the condition of the collodion. It occasionally happens that certain kinds of pyroxyline become, when the collodion has been kept for some time, quite soluble in strong alcohol; hence, when a spirit varnish is applied, the film is partially dissolved as you describe. The safest remedy consists in the application of a dilute solution of gum to the film after fixing and washing, but before drying. This thin gum coating effectually saves the film from the solvent action of the varnish. The solubility does not arise from the state of the nitrate bath. 2. Crapy lines in the film are generally caused by the presence of too much water in the ether and alcohol of which the collodion is made. Sometimes it is aided by the condition of the pyroxyline. Permitting the film to be well set before immersion in the nitrate bath will check the formation of crapy lines.

John Adams.—For a room thirty feet long you cannot do better than obtain a No. 2B lens. It will give you fine card groups.

J. B.—You have evidently not added sufficient liver of sulphur. On adding this to the old hypo bath it will become turbid, dirty, and black-looking, but will eventually throw down a precipitate, which is sulphide of silver. To test whether all the silver is precipitated, take a little of the clear supernatant liquid, and add a little more sulphide of potassium; if it remain clear you may conclude that all the silver is thrown down.

R. M.—The pamphlet on "Spiritualism viewed by the light of modern science," by Mr. Crooks, is printed for private circulation only. He states that the examination is still in progress, but gives no absolute decision, admitting merely that he has met with phenomena which, at present, baffle explanation.

C. B.—So far as we can judge from the examples of paper enclosed, they are very good. The formula seems satisfactory.

Developer.—The strength of the bath for developed prints depends on circumstances, and may range from forty grains to sixty grains per ounce. A saturated solution of gallic acid is used for development. There are various modes of vignetting. A very good plan consists in interposing a card with oval aperture between the negative and the sensitive surface, moving it so as to secure gradation at the edges of the aperture. You will find many hints in an article on page 90 of our Year-Book for 1869. This letter was mislaid, or should have been answered a week or two ago.

Notting Hill. When albuminized paper is used for transfer purposes in the carbon process, the paper should be prepared without salt. 2. An albuminized paper with a seven-grain salting solution generally answers well, and should not be slow in toning. 3. Yes: see Col. Stuart Wortley's remarks in the present number.

Lens.—The lens in question is an excellent group lens, and has not been superseded. We should prefer it to the foreign lens you mention. For cards the 2B will answer well, better than the C 2. Other things being equal, a lens works more rapidly with Waterhouse stops than with stops in front of the lens.

St. Anne's.—The best method of dealing with a clear window directly opposite the camera in taking an interior, is to contrive some means of covering it during part of the exposure. If you paint the back of the plate, or wet a piece of red blotting paper and place it at the back of the plate, the evil will be mitigated.

Viator (Surbiton).—Thanks. In our next. The subject is very interesting and useful.

H. H. Cunningham.—As the new notation is at present only tentative, and not a settled fact, we do not trouble our readers or disturb their studies by entering into the question. Photographers are, for the most part, only amateur chemists, and interested in the subject only so far as it refers to their own art it would simply perplex them to make changes of uncertain acceptation. The new notation is only used in our pages in quoted articles in which the authors have adopted the new method.

Prato Tuscano.—We will take an early opportunity of trying and reporting.

G. Bruce.—Thanks. There was no need for the stamps.

R. M.—A collodion salted with iodide and bromide of cadmium requires a much longer time to ripen than one containing alkalin salts. A mixture of cadmium and ammonium salts is very convenient where the collodion is required for use within a few weeks.

Simpleton.—Thanks. In our next.

A. Whitham, "A Used-up Photographer," and several othe Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
cquiring New Manipulations in Photography ... 349
ncaustic Paste and Varnish for Prints ... 350
Rembrandt" Portraits ... 350
otes from the Continent. By Our Own Correspondent ... 350
hotography in the East. By "Viator" ... 350
merican and European Exhibition ... 353
he Collodio-Bromide Process. By M. Carey Lea ... 354
n Backgrounds and Reflectors. By W. Kurtz ... 355
PAGE
The Camera among the Icebergs. By J. L. Dunmore ... 356
Correspondence.—Direct Carbon Printing—Heat, and Absence of Actinism—Retouching or Scraping Photo-engraved Plates—Col. Stuart Wortley's Printing and Toning Baths—Washed and Fumed Paper—Col. Stuart Wortley's Pictures ... 358
Proceedings of Societies.—French Photographic Society ... 359
Talk in the Studio ... 360
To Correspondents ... 360

ACQUIRING NEW MANIPULATIONS IN PHOTOGRAPHY.

another page we commence a short series of articles on production of photographic enamels,* and as many of operations and manipulations are of a somewhat novel racter, it occurs to us that a few observations necessary he outset are equally applicable to other subjects in ch new manipulations are involved, and that it may be vell to deal with the question in a brief separate article. is a common observation that one practical lesson, one ortunity of witnessing the manipulations in any process, vorth more than a score of verbal descriptions. This o doubt, very frequently true, but it need not be so inveniently true as it is if the student would remember at outset that he is commencing new manipulations, and some degree of precision in carrying out instructions. as not unfrequently occurred to us to converse personally experimentalists who, having undertaken some new ration and failed, have admitted, on question, that they not given careful or detailed attention to the instrucs, but had followed a method with which they were iliar, the manipulations in which they imagined—very n erroneously—were analogous to those in the process y were undertaking. In such case, a single sight of the per operations in progress corrects false or imperfect ions, and the experimentalist naturally indulges in ections on the immense advantages of a practical lesson iving the beginner precise notions of what he must do. v, as it happens that to a very large proportion of the tographic fraternity personal instruction in novel proes is altogether inaccessible, it becomes very important t the method of studying and carrying out written inctions in any new process should be of that character ch shall best render them of actual value, and enable m to take the place of those personal instructions which not within reach. We do not, of course, suggest that it is rable for all photographers to test all processes that they in the pages of journals. Many of the processes which publish are suited to special rather than general wants, each reader will give attention to that which interests . But we do suggest that where it is worth while to a process at all, it is worth doing so carefully and roughly.

Ve give one or two illustrations of what we mean by the less and useless mode of trying an experiment. About years ago, at a time when we were urging upon photophers the advantages of bromo-iodized collodion and development, then not in common use, we were in the ier of a very successful provincial photographer, and we ed him the question if he had tried iron development. He replied that he had done so once, but would never do so again. "Why?" was our natural rejoinder.

"Because," he said, "for the first time in my life it made me acquainted with fog. I had heard of fog, but had never seen it. After working the Daguerreotype process for upwards of ten years, and seeing no such thing as fog, and then working the original wet collodion process with pyro development for more than half that time, and seeing no fog, I was induced, in an evil hour, to try an iron developer. The behaviour of the plate was altogether novel to me: the image rapidly flashed out, and quickly the whole plate became grey; there was no vigour in the lights, no clearness in the shadows, but all was flat, grey, and feeble. Suddenly the explanation flashed across my mind, and I exclaimed, 'By Jove, this is fog!' And since then I have never again tried an iron developer."

"But did you follow the instructions carefully in trying the iron solution?"

"Oh, yes; I was most careful in preparing an iron solution of the full strength prescribed, and using it quite new."

"And what exposure did you give?"

"Just the same as I should for pyrogallic acid development."

"But had you not been informed that the exposure was much shorter with iron development?"

"Oh, yes; I had seen it asserted that the exposure was reduced to one-half or one-third of the time required when pyrogallic acid was used, but I did not believe that there is such a tendency to exaggeration amongst the advocates of any new method."

We assured this gentleman that he had produced fog and flatness from excessive over-exposure; but he was disgusted with iron, and did not attempt to use it again for many years. Thus, by imperfect regard of instructions, he was deprived of the rapidity of action and other advantages attending the use of iron development for several years.

Another illustration which occurs to our mind occurred two or three years ago, when we published the first instructions for retouching negatives with a lead pencil. One very able photographer informed us that he had tried the plan, but found it an utter failure: the pencil would not bite on the surface of the negative.

"What method," we asked, "did you take to obtain a tooth on the surface? Did you use dilute gum solution, or did you contrive to secure a dull or matt surface to the varnish?"

"Oh, I simply tried the ordinary varnished negative."

"And what kind of pencil did you use: BB, or BBB?"

"Oh, I tried an ordinary lead pencil, such as I had for ordinary use. I did not think it worth while to prepare the negatives specially, or get a pencil on purpose for a mere trial"!

During the same week we had a letter from another pho-

The articles in question will commence in our next. The first is posted this week for lack of space.

tographer, one whose habit it was to be precise and careful in all his experiments, in which he said the article on retouching negatives with a lead pencil would be, he considered, worth more to him than he had paid as a subscriber to the Photographic News from the first day of its issue.

These illustrations will serve our purpose. We wish to impress upon those of our readers who are anxious to succeed in new operations, written instructions only for which are accessible to them, that the utmost precision and exactitude are always desirable at the outset. Modifications and variations may be permissible or desirable as the results of experience, but to the beginner a rigid and precise adherence to instructions given is of vital importance. In the production of photo-enamels, for instance—in relation to which we have been induced to make these remarks—almost all the manipulations are novel. We shall describe, as minutely and clearly as we can, all the operations we have first actually seen as performed by an expert, and afterwards repeated under his supervision. Personal instructions in such a process are accessible to very few,* yet moderate proficiency is within the reach of any skilful and careful photographer. The conditions of success are, first, careful study and precise carrying out of instructions; next, steady and judicious perseverance. But this and similar branches of the art are only accessible upon such conditions. It is rare that experts can be induced to write on such a subject; but we have made arrangements with Herr Grane for a series of articles on enamelling; these, we hope, will shortly commence. In the meantime we shall, in a brief series of articles, describe what we have seen of his manipulations.

ENCAUSTIC PASTE AND VARNISH FOR PRINTS.

The various forms of encaustic paste at present in general use amongst photographers, for preserving and giving a fine surface to prints, consist of wax, or wax and with admixture of some resin, dissolved in benzole, turpentine, or essential oils. Herr Grune has been in the habit of using, for a similar purpose, a paste which he describes as easier to use and more efficient than any of those made by the formulæ generally employed. It consists of:—

Pure white wax	... .	1 part
Marseilles soap	... ...	1 ,,

These are both shred fine and placed in a pipkin with a small quantity of water, the precise portion being unimportant. The whole is then boiled and stirred until it is thoroughly incorporated and forms a soft paste. When cold it is ready for use, and is applied to the surface of the albuminized print in the usual manner, and rubbed gently and briskly until a fine polish is produced.

In the first number of the *Lithographer*, a new technical magazine, a formula for a varnish for ordinary prints is given, which is stated to answer well, and may possibly be found useful to photographers. It is made by mixing eight parts of gelatine glue with one part of alum and half a part of Marseilles soap in boiling water. The glue being first well dissolved, the alum and soap are added; all is then boiled, and afterwards strained and filtered. This varnish, it is said, will protect from damp, and is perfectly water-proof. With the addition of a suitable proportion of a haloid salt it is suggestive of a good sizing material for producing photographs on canvas.

"REMBRANDT" PORTRAITS.

The last number of the *Philadelphia Photographer* contains a very fine example of the "Rembrandt" or "Shadow" style of portraiture, by Mr. Baker, of Buffalo. This style is becoming popular in the United States, and is, furthermore, considerably modifying the character of ordinary portraitur by introducing bolder and more varied effects of light an shade. The argument for this mode of working has considerable force. Commonplace or ordinary faces, Mr. Kurt remarks, when lighted in an ordinary manner, will alway remain commonplace and ordinary; but, by unusual an effective lighting, it is possible to give some degree o character to the most insipid faces, and that withou destroying likeness or individuality. Mr. Baker, referin to the thought and study of lighting which the new styl has induced, remarks that it has materially increased th photographer's knowledge of and mastery over his resources and emancipated him from a method of lighting which ha become painfully conventional.

Mr. Baker, in speaking of the details of the charmin specimen in our contemporary, gives the following details:—

The light was sky, without side-light. The lens, 3 B Dallmeyer diffusion of focus. The time of the year, last September; the day cloudy. The negatives were timed twenty seconds.

The collodion was two years old, made of

Alcohol	... ...	½ oz.
Ether	... ...	½
Iodide of ammonium	... ...	2 grs.
Iodide of cadmium	... ...	4 ,,
Bromide of ammonium	... ...	2 ,,
Cotton	... ...	6 ,,

Developer.

Protosulphate of iron	... ...	1 oz.
Double sulphate of iron and ammonium	...	½ ,,
Acetic acid No. 8	... ...	2 ozs.
Water	... ...	16 ,,

The negatives were cleared with cyanide, and strengthened with sulphuret of potassium.

The paper is that of Trapp and Munch, floated half a minute on the following silver bath:—A concentrated solution of silver in water is divided into halves. One half is precipitated and cleared with ammonia; the other half is then added, and the whole rendered almost neutral with nitric acid C. P.; the solution is then diluted to 40°, and may be, when in use, allowed to vary between 35° and 50°. The strength is maintained by adding from a concentrated solution prepared as above. The T. and M. paper seems to have absolutely no reaction on this bath, only by abstracting silver; the solution neither becomes more or less alkaline.

When dry, the paper is fumed. The toning is best done with a warm bath, *very* alkaline, with bicarbonate of soda (that used for cooking). The hypo was one ounce to eight ounces water; time, five to eight minutes.

After mounting, the prints were treated with Salomon's enamel. If the surface of any of these is at all disturbed at any time, a very light polishing with a soft cloth will at once restore it bright and perfect.

NOTES FROM THE CONTINENT.

[FROM OUR OWN CORRESPONDENT.]

Paris, 20th July, 1870.

Coming from Basle to Paris, and passing so close to Dornach, I could not resist the temptation of visiting M. Braun's establishment in that neighbourhood. Dornach is a village on the outskirts of the large manufacturing town of Mulhouse, which might almost be termed the Manchester of France. It is an obscure little place, eclipsed and overshadowed by its giant neighbour; and, indeed, so insignificant, that although there is scarcely a photographer who has not heard of it as the residence of M. Braun, but very few are cognisant of its actual whereabouts.

The task of discovering Dornach is, however, not the only difficulty experienced by a stranger desirous of visiting the locality: its language requires even greater attention and energy on the part of the traveller. Dornach being in France, I address myself in French to the *chef de la gare*, on my arrival at the little station, for information as to M. Braun's residence, and am at once referred to a porter, who, in German, directs me to inquire at the *gendarmerie;* here a French official points out the way, but this proving a little complicated, I apply to a mechanic, who, in his turn, employs the language of the *Vaterland*. However, by judiously ringing the changes, I at last attain the object of y desires, and find myself at the gates of M. Braun's estab-shment.

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* As we have before mentioned, lessons in enamelling can at present be had at Mr. Solomon's, Red Lion Square.

The magnitude of M. Braun's factory may be judged by he fact that as many as one hundred men and boys are mployed therein, and that during one season as many as ,500 carbon pictures, each measuring fifty centimetres quare, were daily produced. Bearing in mind that all these rints were prepared wholly and solely in the establishment—he colours ground, the chemicals manufactured, the tissue repared, the rubber cement mixed, and the prints mounted, etouched, and finished—the amount of work involved is exceedingly great. Of all the manipulations the retouching f the prints is probably the most tedious, and requires most ands, for, in this branch of the establishment alone, thirty o forty employés find work.

The carbon process employed is the Swan method *pur et imple.* M. Braun has been considering the advisability of oing over to the Johnson or Autotype method, but, as yet, onsiders he cannot do better than adhere to the process he as so successfully worked for several years, and for the laboration of which his arrangements are exceedingly perfect. His tissue he prepares ready sensitized, the pigments eing ground for the purpose in a long row of metal basins, ach containing a heavy iron ball, and set in motion by team power. M. Braun employs, on an average, as many s twenty-five to thirty sheets of tissue a day, each sheet measuring four metres in length. The paper is coated with he bichromated pigment by being passed on rollers several imes through a trough of the sensitive mixture, maintained at a temperature of 80° Fah. The pigment generally employed is black, with a slight admixture of bistre.

The rubber paper is also prepared upon the premises in large continuous rolls, benzole being exclusively used to effect the dissolution of the rubber. No difficulty is found in transferring the prints, even when of such extreme magnitude as 1 metre 15 cents. by 60 cents, the size of the largest carbon prints prepared. Large metal rolling-presses are used, to ensure perfect adhesion before transfer, and these are all worked by steam power.

By far the greater majority of the pictures prepared in the establishment are printed in carbon, silver printing being, indeed, resorted to merely in the production of cheap cartes-de-visite. M. Braun is of opinion that the carbon process will always hold its own for the more artistic branches of the art—as, for instance, in the reproduction of cartoons, paintings, &c.—but that for other purposes, and especially those of a commercial character, the Woodburytype will be more useful. It is for this reason that M. Braun has recently purchased the right to work the photo-relief process; and so much progress has already been made in the establishlishment during the preliminary trials, that its successful employment at Dornach has become a matter of absolute certainty.

M. Braun has but three or four printing-presses at work at present, but anticipates very shortly, as soon as the weather has become somewhat more moderate, to increase the number very greatly. Like MM. Goupil and Co., he employs the Desgoffe press, instead of the ordinary hydraulic machine, for producing his engraved plates from the gelatine, and speaks highly of its capabilities. The metal plates are purchased ready for use, and possessed of the requisite uniformity and evenness. The largest pictures yet printed measured 12 inches by 10, but no difficulty is anticipated in obtaining much larger impressions if required.

The matrix is composed of gelatine very darkly tinted with indian ink, so that the period of pose may be the more readily judged during printing; exposure to direct rays, which, in the earlier days of the process, was considered an essential particular, is found to be unnecessary, and all that is needed is to keep the pressure-frame in the shade. The washing of the gelatine cake, one of the most important manipulations, requires a period of about three-quarters of an hour, the films remaining for that period in a dish of water heated to a temperature of 100° Fah. The relief is subsequently dried slowly and carefully, hardened in alum, and impressed upon the type metal. The thinner and more delicate the matrix, the more successful do the subsequent results appear to be.

The paper employed for obtaining the impressions is a Rive paper, coated with a solution of shellac, and afterwards dipped in borax and water to render it impermeable; vigorous rolling by means of stout metal cylinders finally imparts to it an even surface. M. Braun does not profess to have entirely mastered the process, or to have obtained results of the most perfect description, but says that he is confident, after he has been enabled to devote some time and attention to the method, of producing pictures of any description with certainty and rapidity. More delicacy and sharpness are obtained by means of the photo-relief process than in carbon printing, and he believes, indeed, the Woodbury prints to be scarcely second to silver printing.

A sheaf of impressions were brought for my inspection, of cabinet size, all of them being portraits with artificial backgrounds, and, although merely preliminary trial prints, they were fully equal, if not superior, to any Woodburytypes I have yet seen. If M. Braun will only bring to bear but half the amount of energy he has bestowed upon carbon printing, Woodburytype will be without a rival in the region of photography.

As I before remarked, all chemicals employed on the establishment are prepared within its walls. Nitrate of silver, chloride of gold, collodion, and most of the compounds used for developing, fixing, &c., are all carefully made up under M. Braun's direction, so that a supply of good and uniform quality is always ensured. Large cellars and stores are, of course, necessary for the preservation of these requisites, and such of the chemicals as are of an explosive nature are carefully stored by themselves in isolated localities.

The negatives, of which something like sixty thousand exist at Dornach, are kept in boxes containing about a dozen each, and deposited in a cellar underground where a cool temperature is invariably maintained. Thus preserved, the films are free from all danger, and suffer no change from variations in the atmosphere. The operating rooms open out from this cellar, and are, therefore, likewise dark and cool, the baths, developers, and other liquids possessing always a uniform temperature.

Above are the two studios: one facing direct south, for winter use, and almost unbearable during hot weather; and the other in a more sheltered situation. All the *genre* pictures issued by Braun are taken in these studios, the paraphernalia of backgrounds, foregrounds, and costumes, being very large. Of all pictures, three negatives are invariably taken, two of which are kept in store until absolutely required. A very large series of Swiss costume pictures have recently been taken, which have recently become exceedingly popular, and prints from these are rapidly produced in carbon, silver, and Woodburytype.

For obtaining reproductions from paintings and cartoons, as likewise landscapes from nature, as many as five artists are constantly employed by M. Braun, and these forward their productions to Dornach from time to time for printing. During the Suez Canal *fêtes* M. Braun fils was engaged for upwards of six months in Egypt securing points of interest in connection with the opening of the canal. The lenses employed are, of course, of various descriptions, and are, for the most part, of Dallmeyer's manufacture; the handsome 12 by 10 Swiss costume portraits were taken with a four-inch portrait lens. Not a single negative has ever been purchased by M. Braun, who boasts, indeed, of performing the whole of his photographic operations complete from *alpha* to *omega*.

All pictures are mounted with gum alone, after being carefully inspected and trimmed. Retouching is performed upon the prints, and very rarely upon the negatives, and it is upon this branch of photography, as likewise that of colouring, that the greater portion of the *personnel* of the establishment is engaged. Several spacious rooms are devoted to this description of work, containing employés of almost every age. From simply touching-out spots in Indian ink, to colouring elaborately large and valuable pictures, the work here ranges, some of the artists being of very high standing.

The establishment is the largest and most complete I have ever seen, and is, indeed, without doubt, the most extensive factory of photographic prints in the world. M. Braun appears to be always ready to lend a willing ear to new processes and suggestions, and when he does take up a thing, it is never for want of proper attention and energy if it does not succeed. He is, perhaps, the only photographer who has worked the carbon process to any considerable extent, and certainly the only one who has succeeded in making it pay well as a commercial enterprize. And in the same way as he has been a pioneer in carbon printing, it appears in every way likely that he will demonstrate very shortly the real value and practicability of Woodburytype.

By railway from Dornach to Mulhouse, although a journey of but fifteen minutes in the ordinary way, occupied me longer than if I had walked the distance. No less than five trains of soldiers passed on their way to Strasbourg while our carriages remained carelessly shunted on to a siding, and when we arrived at Mulhouse a further delay occurred before a passenger train could be despatched on to Paris. Three through trains a day constitutes the whole amount of passenger traffic permitted by government, and these have no stated times of arrival or departure.

The line from Mulhouse to Basle, however, possesses one advantage not to be valued too lightly. An arrangement—which, by the bye, has been in operation to my knowledge for five or six years, and yet without being followed elsewhere—has been made at one of the *buffets* on the line, at which travellers may be provided in their carriages with a hot dinner or breakfast to be partaken of *en route*. The guard telegraphs the number of passengers desirous of such meals, and on arrival at the *buffet* the required number of tall cylindrical baskets are found waiting on the platform. These, under the direction of the guard, are distributed, and then on goes the train. Each basket contains three hot dishes placed on shelves one above another, bread, serviette, knife and fork, a bottle of wine, and a bottle of water. An hour is very pleasantly got through with the aid of these creature comforts, and at the end of that time a halt is made at a station to collect the empty baskets.

In Paris, just now, but little can be seen or done. With the exception of the Imperial Guard the whole of the troops have left for the frontier, and the excitement on the boulevarts and elsewhere is overwhelming. A new system of advertising at night, which will probably reach London in a few months, is very effective. High up in an exposed position, and sheltered from the street lights by the trees, is a huge screen of immense proportions, and upon this is reflected, by means of an oxyhydrogen lamp, some coloured advertisement, having the effect of a brilliant transparency. The advertisements are, of course, well chosen and executed, and are changed every two or three minutes, constituting, therefore, a great source of attraction.

An absurd *genre* picture which I saw on the boulevarts to-day I must describe, before closing these notes. It represented a daring Alpine climber in the midst of glaciers and snowy peaks, leaning upon an alpenstock branded with the names of a hundred conquests. Instead, however, of the shirt and trousers, and, perhaps, light shooting coat, in which mountaineers generally accoutre themselves, the pedestrian was depicted in a fur cap and heavy sable overcoat reaching down to his heels, garments that seemed in no way to incommode the portly traveller, judging from his cool and contented visage, which, nevertheless, was probably more conversant with the Mabille than the Matterhorn.

PHOTOGRAPHY IN THE EAST.

Photography in the East is not quite the same as photography in the West. The dust, and heat, and pinholes, and various annoyances that try the temper and patience of the photographer at home are magnified considerably when you find yourself thirty degrees nearer to the equator. And, besides all this, your inability to procure many things essential, not only for your own personal comfort, but for the purposes of your art, are sufficient drawbacks to render photography a popular study with those who have not made it their profession.

A few hints—or, rather, perhaps, the result of some four years' practice as an amateur in India—may be useful, not only to those who are at present in the East, but to those who intend trying their luck out there. I have no experience of portraiture beyond that of groups, such as most amateurs at times undertake. I have confined myself entirely to landscapes, and it is, therefore, of landscape photography only that I can speak.

India presents such a vast field for the landscape photographer that no efforts should be spared to obtain the best results. One has only to see the magnificent photographs of Himalayan scenery, taken by Messrs. Shepherd and Bourne, to be satisfied on this point. The old Hindoo temples, found in nearly every important town of India; the caves of Elephanta; the rocks at Mahahalipooram; the temples at Trideinopoli; the beautiful scenery on the Neilgherry hills; and the grand scenery on the Himalayas, are subjects more than sufficient to form an occupation for a lifetime. But the occupation is not without its difficulties; and in the Himalayas in particular a great many trials and disappointments are sure to be met with. Every step almost that you take brings you into another climate. In a few hours the intense heat of the plains is exchanged for cool breezes and bracing air; and in a few more hours the cool breezes may be exchanged for the cold blast from the region of perpetual snows. Delightful as all this is, and a life that seems to reinvigorate you after what you have felt for the past few months, it is trying at first to your constitution unless you are careful, and to your chemicals almost in spite of your care. Then, again, the means of transport is by no means easy or cheap. Coolies are not so easily procured as they used to be, and the wages they demand are considerably higher. Of course a great deal depends on the route you intend to pursue when once arrived at your starting point of Simla or Landour. Should it be to the Vale of Cashmere, you have now good roads, and your baggage can be carried on mules. But there are many routes in which the scenery is well worthy of a visit, where the track is not accessible for beasts of burden; you are therefore totally dependent on your coolies, and, to say the truth, your kit is far safer so carried than in any other way.

It is a tolerably long march from Simla to Cashmere, and one that you would scarcely undertake unless you could afford to spend some four months on the expedition. And I think the best plan for carrying your apparatus and chemicals is to get a box made of untanned leather, somewhat similar to the boxes called camel-trunks. Each box, with its contents, should not exceed fifty pounds in weight; and it should be fitted with an iron ring at either end for a bamboo to pass through, so that two men can carry it. Your box is thus protected from the weather, and is not liable to injury (as a wooden box would be) from projecting ledges of rock; and the coolies, from not being overweighted, can keep up with you. Let the box be of a convenient height to form a low seat for you when in camp; and also, by means of the ordinary stretchers that are sold with most bullock trunks, they will form your bed for the night. It must be remembered that you can only carry a small tent to sleep in, and that the less luggage you can do with the greater will be your comfort. I do not recommend smaller plates for mountain scenery than 10 by 8; and I think 12 by 10 is the best size. I presume that an apparatus purchased from any of the leading makers is thoroughly to be relied on. The camera should be brass-bound and screwed together, and so should the dark slide. This latter is seldom done, as the extraordinary care taken in dovetailing the lower portion of the slide is, I conclude, considered sufficient; and perhaps it is, if care is taken to renew the shellac varnish inside the slide occasionally; but if this is neglected, the drainings from the plate will, in time, eat into the wood and soften the glue. The dry air soon causes it to open, and a ray of light from whence you least expected it fogs your plate. The safest plan is to have a thin strip of brass let into each corner of the slide; you need then have no fear of such an accident to spoil your plate. I prefer the bellows camera of the conical form: it is the most portable, and least liable to injury. I had one in constant use for about seven years—some of which were in India—and it is only due to the makers (Messrs. Murray and Heath) to say that a more perfect camera could not have been turned out. It stood, without a flaw, the hot sun and scorching winds of the plains, the long-shore winds of the west coast, and the cold, damp, and rain of the hills. I have heard that it is a good plan to have the bellows body of your camera made of Russia leather, as a safeguard from white ants and cockroaches. Certainly no precaution against the attack of such enemies should ever be neglected; but my camera-body was constructed of the usual materials, and was never injured by them in any way. But this, of course, may have been from good luck; so, as Russia leather does save you from your enemies the white ants, why I should say by all means use it.

To offer any suggestions as to the proper lens to employ would be entirely out of place. All I can say is that I have generally used the triplet; at times the wide-angle lens is useful. I am now using Steinheil's patent, and like it very much. But every one must get the lens he prefers himself for landscapes; only, as in most instances the cheap foreign lenses are useless for taking anything like a photograph, I would suggest that no one waste money on them.

Every one has his own peculiar fancy about tents. I like Rouch's tent better than any I have tried: it has all the advantages of ventilation and portability that are requisite; perhaps, for India, I should be inclined to have it made of thicker wood, so as to give it greater strength; the weight would not be increased, as the outside canvas cover for the box can be dispensed with if the box is only strong enough to stand knocking about. I have known instances of men using two tents to work in: one in which they coat and sensitize the plate, and the other to develop in; it is an excellent plan, as the fumes of the collodion are unpleasantly painful in a hot climate; but, of course, it has the great disadvantage of encumbering you with extra baggage. I do not recommend a white covering to go over your tent as a protection from the sun; the best plan is to provide yourself with a very large umbrella with a stick about seven feet long, and a small spike to screw in the handle; this, by means of two guy ropes and some pegs, is easily fixed over your tent. It adds but little to your baggage, as it is very light, and it materially increases your comfort; the stick of the umbrella should be jointed in the middle like a tent pole.

You have no difficulty in procuring in the bazaar a yellow stuff known as bungaree; two or three thicknesses of this forms a sufficiently good yellow window for your dark room; but it is liable, like all materials that are dyed, to fade by exposure to light; and I have found the following plan excellent:—Strain over the window of your room or tent a piece of the finest longcloth, and, with a paint brush, coat it some two or three times with a varnish made as follows:—

Mastic	4 ounces
Gum dragon	1 ounce
Gum gamboge	1 „
Spirits of wine	8 ounces

Strain, and when quite melted, add two ounces of oil of turpentine. This makes the cloth a good transparent non-actinic colour, which is improved if the cloth be first steeped for four hours in a solution of eight ounces of Brazil wood and one ounce of alum boiled in a quart of water. Glass may also be made of a good non-actinic colour by coating it with a varnish made of—

Gum dragon	1 ounce
Seed lac	2 drachms
Gum gamboge	½ ounce
Spirits of wine	4 ounces

Strain, and warm the glass before you apply the varnish.

Gum dragon is easily procured in any bazaar in Bengal or Bombay, under the name of dummoolakween; and in Madras it is known under the name of gahndarmooroo gum rut tum. Seed lac is known in Bengal as lach, and in Madras as panai arruck. Gamboge is called rubba riwand in Bengal, and muckee in Madras. Spirits of wine is called ruhay shrab in Bengal, and saraium in Madras.

Your bath does not keep in working order so long as it does at home, and I do not think you can have a better bath than the ordinary one of thirty grains of silver to the ounce, and following the simple rule of coating a plate with collodion and allowing it to remain in the bath for some five or six hours. If your bath gets out of order, either follow Mr. Blanchard's method of boiling it down as recommended in the Photographic News Almanac for 1869 (I think), or else correct with a ten-grain solution of cyanide by adding a little and shaking it; when turbid, sun for some hours, filter, and make it up to thirty grains again; or else follow the present method, which is, perhaps, the easiest and is very successful,—viz., make a four-grain solution of permanganate of potash, add a little to the bath, shake it, if it does not remain tinted add some more until it does, sun and filter, and make up to strength.

And here I may as well remark that every photographer going to India should provide himself with a good still and dishes for evaporating or boiling down his bath, or chloride of gold solution, as this is an article he can so easily make for himself. *(To be continued.)*

AMERICAN AND EUROPEAN EXHIBITION.

Dr. Vogel gives, in our Philadelphia contemporary, his estimate of the comparative excellence of the photographic exhibitions held in Berlin in 1865, in Paris in 1867, and in Cleveland, Ohio, last month. Of the two European displays in question, he says they may "have excelled yours in the quantities that were exposed, but hardly in the quality of the work; and the most famous of the French exhibitors, Berlin and Parisian photographers, were represented in Cleveland. When we add to these a long list of the able American artists (who in Paris were only partially represented), we cannot feel surprised at the brilliant success. I regret that American artists have contributed so little to European exhibitions, or the opinions in Europe of American photography would be quite different. Of how much importance exhibitions are for the progress of photography has been demonstrated in Cleveland in the most striking manner.

"In Paris, the pictures of Adam-Salomon attracted more attention than any others. American photographers have probably seen the least of the French Exhibition, and still your Exhibition proved how the French artist is appreciated here, and how many have followed in his footsteps. In Germany, his pictures have, perhaps, been acknowledged, but hardly any one has imitated them. However, this Salomon style, with its effects partially produced by copying tricks, will only be suitable for certain peculiar cases. The process requires much time and a very artistic printer.

"Besides Salomon, Reutlinger has certainly exercised a great influence, as well as the works of my Berlin countrymen. Salomon suppresses details, except in the face and hands; with him the accessories are lost in the half shade, Reutlinger and the Berlin artist pay more attention to them. Salomon works darker than nature, the others try to approach the natural tone.

"It is not my intention to give a review of the Exhibition; I only can mention certain specimens as types, and explain their peculiarities.

"In the pictures of Lœscher and Petsch, the desire to harmonize the persons with the surroundings—such as furniture, background, and accessories—is manifest. These things have their significance; we live amongst them, and to place them in the picture is natural, only they must appear in colour and arrangement as secondary, and must be in harmony with the rest of the picture.

"Painted backgrounds have very often a stagey effect. Lœscher and Petsch employ them very little. They have real furniture, partly in rococo or renaissance style, the colour of which is varied until it produces the desired effect in the picture.

"As a special progress in photography, negative retouching must be considered.

"In Paris, several photographers were quite indignant when I expressed the opinion that their negatives had been retouched. They seemed to consider this a crime, and shrugged their shoulders when I told them that in Germany nearly all the negatives are retouched. I am glad to be able to say that the Americans do not turn up their noses at negative retouching, but that they know very well how to apply it.

"Besides the above-mentioned works, your Exhibition showed pictures which indicated a peculiarly American tendency, which has already made itself felt in Europe. In this class belongs, first and foremost, the Rembrandt style. This style is apparently generally appreciated. Mr. Kurtz, of New York, is right when he says that an ordinary face, lighted in the ordinary manner, will always remain ordinary, while an extraordinary light effect can give to the most insipid features a certain intellectual aspect. Generally, the very black background of the first Rembrandts has been abandoned. The toning of the background, light on the shadow side of the face, and dark on the light side, is the first condition for producing a 'relief.' Salomon toned his backgrounds by exposing his prints to sunlight, Petsch by shading them, and Kurtz by a curved background. The latter is certainly one of the most interesting American inventions. How many variations this style has experienced in the course of time is shown by the pictures of Howell, who has only retained the light effects, and who keeps the background much lighter than has been done heretofore with Rembrandts.

Another branch, much cultivated in the United States, are the enlargements. In Germany, this work is only done in the southern parts. In the north, the sunlight is too often wanting. In Berlin, not a single enlargement is made any more. I was not a little surprised when I saw in Philadelphia, in the establishment of Mr. Moore, eighteen enlarging apparatuses in operation.

"The demand, of course, produces a greater practical experience, and I must confess that I have nowhere in Europe seen such excellent enlargements as in the United States.

"The so-called photo-crayon style seems, in skilful hands, well adapted to enlargements; for smaller pictures it is less suitable; they appear too much like lithographs.

"At all events, the cultivation of these varied branches of portraiture shows the great zeal and activity of American photographers.

"Without any desire to flatter, I can make the assertion that you have as good artists in America as we in Europe, only the direction in which they work is different.

"The same holds good in landscapes. Excluding the pictures of the Yosemite Valley, which were already known in Paris, this branch was, in quantity, not very strongly represented.

"The dry-plate processes of Carey Lea and Newton may become very important.

"Quite different, again, are the printing processes—the Albert process and the relief-printing process of Woodbury. Where a dozen copies only are wanted, these new inventions have, perhaps, no practical value. Their importance lies in the production of quantities for the illustration of books or collections of pictures for scientific or technical representations and reproductions.

"Albert's process is more like lithography, and the pictures are printed in a similar manner; they do not reach the delicacy and depth of a silver print. How many impressions a plate is able to furnish has not been ascertained yet. The printing itself requires much skill. This process is best suited for reproducing crayon drawings. The Woodbury pictures approach, in delineation, depth, and half-tones nearest to the silver print; the printing is easy, and the number of copies that can be made is very great. Large pictures seem to offer some difficulty, but the success of the process for the production of smaller pictures in large quantities seems to be established beyond a doubt.

"Vainly did I look in your Exhibition for specimens of the so-called Berlin Process. I do not believe that the artistic negative retouch can be replaced by any mechanical or chemical process; it is, however, possible that by such a method softer half tones may be gained in the face, as is plainly visible in the specimens shown; these pictures, are, however, deficient in sharpness, which is partly caused by the fact that the diffused daylight, as well as the direct sunlight, produces the print. In this respect, the principles of the printing apparatus by Hamilton, of Sioux City, is worthy of notice. The apparatus consists of a dark-box, at the bottom of which is the printing-frame; the box can be turned towards the sun in any direction, and diffused daylight is excluded by the sides of the box.

"For years our negative and positive processes have remained stationary, and it seems almost as if no improvement in the mechanical or chemical methods was to be expected, and yet the Obernetter paper and the collodio-chloride of silver pictures on opal glass show that greater fineness can be produced than with ordinary albumen paper, and I believe the time is not very distant when an albumen paper will be made which will yield as fine results as collodio-chloride of silver on opal glass.

"The main thing, however, even with the best process, is pose and illumination. Without a due regard for artistic principles, the best chemicals and papers will fail to produce a beautiful picture."

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THE COLLODIO-BROMIDE PROCESS.

BY M. CAREY LEA.[*]

Many persons, I am told, are prevented from trying the collodio-bromide process from the fear of having their work spoiled by using an unsuitable cotton. It is certainly true that without a good cotton nothing can be done, but I am inclined to think that these cottons are not as scarce as I supposed. The only two experimenters in this country who have written to me as to the result of their trials, used cotton which they chanced upon in their respective cities, and both are extremely pleased with the results. Success came easily in both cases and at once, and both say, without hesitation, that the process is at least as rapid as the ordinary wet process, as to which they are fully competent to judge. The cotton that I have used has been made for me by Mr. Peter Parys, 617, Hallowell Street, Philadelphia, who will furnish it to such as may want. From specimens of work shown me by each of the other gentlemen, I should judge that their cotton was at least equal to mine in excellence.

I should, therefore, recommend all who may be disposed to work this process, to procure several specimens (three or four) of cotton from different sources, asking always for most intense, and to make up a few ounces of collodion from each. The following formula will be found a good one; it is exactly the same as that which I have published before, except that it is a little more dilute:—

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[*] *Philadelphia Photographer.*

Alcohol (pure and strong) ...	...	3 ounces
Ether (concentrated) ...	...	5 ,,
Bromide of ammonium ...	...	12 grains
Bromide of cadmium ...	...	60 ,,

It is best to use the cadmium salt from ounce bottles, kept well corked. Many of the makers seal them up with bee's-wax; this is the best way, as then the bromide of cadmium is kept from the air, and remains in transparent needles. If, in any other condition, it contains an indeterminate and variable amount of water, and when used n any other form than that here mentioned, it will lead o confusion and mistakes.

The specimens, having been prepared, are to be set aside for two or three weeks in a bright, warm room, and if the un rests on the bottles for some hours daily, so much the better.

When wanted for use, add two drops aqua regia to the ounce, and sensitize with nitrate of silver in the proportion of fourteen grains to each ounce, grinding it finely, and disolving it with the aid of heat in a quarter of an ounce of alcohol for each fourteen grains. (The nitrate of silver is reduced in proportion to the reduction of salting, but still maintains a large excess over what is needed to equivalent he bromide.) The aqua regia is made by mixing one part of ordinary nitric with two parts of ordinary muriatic acid, and setting in a moderately warm place until the mixture becomes deep orange colour. It keeps indefinitely f the bottle be securely stoppered. If this addition be neglected or overlooked, every plate will fog, with perhaps only traces of an image. This treatment is that on which everything turns. Until, after many experiments over a period of months, I discovered this mode of operating, there was always an uncertainty as to the results; with it the negatives are brighter and cleaner than wet plates.

If intending to make the plates in the evening, sensitize very early in the morning; if intending to coat in the morning, sensitize the evening before, allowing about welve hours before using. After pouring the hot solution of nitrate into the collodion, shake up well at once for four or five minutes. Another shaking in the middle of the morning, and another a couple of hours before using, will be sufficient. Filter through a fine linen filter with a bit of clean sponge in the neck of the funnel. Run an edging of india-rubber dissolved in benzole round the plate; this is essential.

Coat the plate rapidly. As soon as set, throw into a pan of water, take out as soon as greasy marks are gone, and plunge into pan of preservative (see previous papers). Five minutes in the preservative is enough, or three to six.

The best drying is in a drying-box over sulphuric acid; but any mode of drying will do that is suitable for any other process. The plates may be rested against a tin can of hot water, which will not injure them, even if it is so hot as actually to boil.

An essential point in drying any plates by heat, which I have never seen in print, is that they should drain five minutes or so before placing in the heat. To a neglect of this precaution I have traced surface-markings of a very annoying and previously inexplicable character. With this precaution they disappeared at once. The precaution increases in importance with the degree of heat that is to be mployed

Development.

The development is always a critical matter in dry-plate work, but with these plates very easy and simple. I have lately traced out a most curious fact which has explained anomalies previously very perplexing. It is that the question whether or not bromide will be necessary in the development depends to a large extent upon the cotton used; that is, two specimens of cotton, each giving excellent results—when treated in exactly the same way, made at the same time, kept equally long, sensitized together and passed through the same baths, exposed and developed together—may the one absolutely need bromide in the development, and the other do better without it. I have tested this fact too carefully to be in any doubt about it. Consequently it will always be best to use bromide until it is found to be unnecessary. I estimate that the use of bromide entails an increase of exposure of one-third. If thirty seconds be right without bromide, forty will be needed with it. But as there is little danger of over-exposure with these plates, it is never necessary to calculate closely, but best to give enough to be sure, especially if there be shaded foliage. This last difficult feature cannot be mastered so well by any other process that I have ever tried, as this which I here describe. For a 6½ by 8½ plate, pour into a pan, just large enough to carry it—

Water	4 ounces
60-grain sol. bromide of potassium	½ drachm
80-grain sol. carbonate of ammonia	½ ,,
60 grain sol. alcoholic solution pyrogallic acid...	½ ,,

These are to be added in the above order, mixed well by agitating, and the plate slipped in. Where a full exposure has been given, it will be well not to add the whole of the carbonate of ammonia at once, but a few drops at a time. With a full exposure the development is quite as rapid as that of a wet plate. No previous washing or moistening with alcohol is necessary. If the plate has had a good, full exposure, it will come up to printing density in this bath in two or three minutes. If it does not, it will only be necessary to add as much more solution of carbonate of ammonia as already directed. Lift out the plate, add the solution, mix well by agitating, and return the plate.

The dirty work of redeveloping with acid pyro and silver is never necessary. If it were desirable, plates with double or treble density could be easily got: density never presents any difficulty if the cotton is good.

But these plates, like almost every other sort of dry plates, need backing to give the best results; especially to show clean, sharp foliage against the sky. For this purpose, after many trials, I have settled down to a mixture of equal parts of Spanish brown (of the best quality), powdered gum arabic (clean and pure, from a reliable druggist), and powdered white sugar. Mix up, and apply with a bristle brush. Try first upon a bit of glass, and let dry; if it scales off there is too little sugar, but, up to this point, the less the better; use no glycerine. Put on pretty thick, and wipe off, just before developing, with a wet sponge. It is worth while always to use this backing. I back my plates as soon as they are out of the preservative bath, and let both sides dry together; but this cannot well be done if the plates are dried by heat, as the backing will run down in streaks.

One final and important hint remains: If the plates, just after coating, show a tendency to mottling of the film, thin the sensitive mixture, not with alcohol or ether, but with plain collodion, which must be made of the same or analogous cotton. This should be kept on hand, filtered bright, for this purpose. The advantage is, that although alcohol or ether will also cure mottling, the cure lasts only for a plate or two, then the trouble returns.

ON BACKGROUNDS AND REFLECTORS.

BY W. KURTZ.

Long before engaging in photography myself, I inspected with great interest the work of others in the art, and particularly with reference to artistic effect. My conclusion was, that if photography could not be called a fine art, it sometimes came very near it; the one great drawback, however, was the universally monotonous appearance of the backgrounds. For instance, in a frame of ten pictures of different persons, each in costume differing from his neighbour, you would find the same light or dark background to one and all, thereby almost pointing out whence they originated; that is, from whose establishment they came. This was called good, even work; but I can only say that out of the ten backgrounds but one had the proper weight of colour; that is, one only produced the proper effect in relieving the face and figure by harmonious contrast. All this was years ago, at the time the good old four by four pictures were the rage. Great improvements have since been made. Fancy backgrounds have been introduced—but not to my fancy! Panels, with goblins, paperhangings, windows and doors, both real and painted, garden scenes, gates, trees, mountains, &c, are all called into requisition, and serve generally but to spoil many a good picture; however, I am told the public like it, and we can only wink at it. Very fair results, it is true, can be effected in this way, but to produce a picture wherein all shall be in good keeping requires the utmost care and much time.

A full-length picture must be relieved by a broken background, and with painted clouds a fine effect can be obtained; with such a one, however, avoid leaning the figure on a desk, &c., and be careful to avoid a carpet for your foreground. Should the background be a painted landscape, do not have the sky of too dark a colour, giving a cold and wintry effect, whereas, perhaps, the dress may be of thin material, with a straw hat, &c.

Photographers must be aware that they are to produce effects by different means than those employed by artists; therefore, it is better to do well what belongs legitimately to photography, than by innovations to aspire at something devoid of all artistic rule. If, however, you must transgress, and introduce painted landscapes behind the figure, have as little of it as possible. With a broad background and plenty of room behind you can foreshorten it, and have it light or dark to suit your figure. The floor line will then run up on one side, and this has to be overcome by arranging the foreground in such a manner as to cover it.

The best fancy backgrounds I have ever seen came from Paris. The figure relieved well against a broadly painted park scene, with a fine light effect on one side, and some excellently painted shrubbery (without much detail) connected well with the foreground, consisting of some real plants, rocks, &c. One picture—a full-length figure of a lady in black velvet dress—gave one the impression that the background was painted expressly for the figure—it was in such good keeping, and very atmospheric; but I am sorry to say such was the case in this picture alone. In some of the others—of which there were ten or twelve—the background was too heavy; in others too light; and in others, again, was out of keeping, the figure being altogether overpowered. That all persons should not be put against one and the same background, light or dark, is, I believe, understood. There are certain rules regulating this; but, after all, it is much a matter of feeling.

For heads and busts, one middling grey background of woollen material is enough; out of this a very light or a very dark one can be made according to the angle in which you put it. Pictures—that is, the likeness—are often condemned on account of the background alone; for instance, a blonde is placed in front of a light background, and, to make matters worse, vignetted in the printing; for we all know that fair complexions, especially with light hair, take a little darker than they should, and, if relieved on a lighter colour, will, by contrast, look darker yet. Hence the expressions: "Oh! it don't give any idea of her pretty shade of hair." "Oh, dear! she looks like a brunette," &c. And they are right. All persons of light complexions should be put against a darker background. If the picture is to be vignetted, darken your paper around the head a little, just enough to kill the glaring white of the paper; by this the strength of the light on the head is kept, since everything else is darker, and the effect of a blonde is forced by proper contrast. This rule will work the other way as well. A dark, sunburnt, or Cuban-complexioned gentleman can be made to look very light by a pretty dark background, but the likeness will be better if relieved against a lighter one, since this gives the impression of a brunette at once; moreover, the background is to relieve a head all round, and not on one side alone, as you frequently see done by photographers. Imagine one side of a lady's face well relieved from the background, it being the side on which the light strikes, whilst on the shadow side the background and face are of precisely the same colour: of course, the whole thing is ruined; whereas, if the background had been pushed just six inches forward on the shadow side, that side would have been a shade lighter, and the picture would have been all right. In nature the face is relieved well enough, because there is a contrast of colour. Thus the portrait painter has an advantage over us poor fellows. We have a certain scale of tints, which lay between the highest light (the white of the paper) and the deepest shadow (nitrate of silver) to work with; the painter has all these and a great many more, since he relieves them in colours. This can best be proved by studying the figure on the ground glass of your camera, where it shows in good relief on account of colour, but in the negative the relief is not so good, as the shadow of the face may come out of the same tint as the background.

This background should not be an even flat surface, but should graduate toward the light side of the figure, and lighter on the dark side. To accomplish this, photographers often paint a light spot on the dark ground to relieve the shadow; but this does not work well, since you have to raise or lower the background to get the light part where you wish it.

I have an idea, with reference to a background which I am sure will work well. Instead of a graduated tint painted on the background, I propose to have the light itself throw a shadow over it, which will blend from dark to light much better than any artist with his brush can possibly do it. This the reader can illustrate for himself by means of a common saucer for a background, and by placing in front of it a little doll's head. You will at once see what a great number of different effects you have at your command by turning the saucer to the right or left, and by tipping it forwards and backwards; the blending is wonderfully soft, and you can have the shadow stop very suddenly also without being harsh. If you put the doll under a top light, the top light will make a shadow on the background just where it should; and if you have your light on one side, the weight of the shadow on the saucer will also come where it should; and again, if you light up with both combined, you will also find the little saucer do its duty nicely.

In conclusion, I wish some public-spirited fellow-photographer would go to work and build a light frame for suspending a gigantic saucer on a universal joint. The saucer should be about five or six feet in diameter, without any seams, and of a light material (papier mache or straw mache), which may be painted of a light grey.—*Ptohographic Mosaics.*

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THE CAMERA AMONG THE ICEBERGS.

BY J. L. DUNMORE.*

Having just returned from a photographic trip among the icebergs, probably a few notes of the trip may interest your readers, and I jot them down.

The expedition was arranged by Mr. Wm. Bradford, the artist, accompanied by Dr. I. I. Hayes. It was my second trip to the regions of ice, so I knew somewhat beforehand of the hardships that had to be endured and the difficulties to be met with.

We left Boston June 13th, and, arriving in New York, found one box of chemicals broken. We replaced them, and left for Halifax on the 15th. After a splendid passage we arrived there on the 17th. I found two boxes of glass broken (about one hundred sheets). I travelled all over Halifax to find some more glass, and the only place I could ind any was at a hardware store, and that was of a very poor quality. I went to Mr. Chase, the photographer there, who was very accommodating, and assisted me in albuminzing my glass. Started the next day for St. John's, N. F., ather discouraged, but in hopes that a bad beginning would make good ending. We arrived at St. John's on the 21st. Nothing of importance occurred on the trip. We expected o find our steamer waiting there for us, and were much disappointed to find that she had gone to Sydney for coal, for we had to wait in that dead-and-alive place a week before she returned. To pass away the time, I made some wenty-five or thirty views of very beautiful scenery hereabouts.

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* *Philadelphia Photographer.*

The steamer arrived and we went aboard the 28th. We et a carpenter to work building a dark-closet. It was ifteen feet long by six feet wide, with all the modern mprovements. Our steamer (the *Panther*) was of three hundred and fifty tons burden, and was built very strong, on purpose for the ice, and was used for seal fishing in the pring. The passengers and crew consisted of about thirty, he jolliest crowd that ever sailed for Greenland.

We left St. John's on the 3rd of July, and were very glad o get off. The 4th was a very unpleasant day, foggy, and very heavy sea running; all hands a little sea-sick; could at but little breakfast, and did not feel like celebrating much; was not at all patriotic; the foreign water had a bad effect on us. Had bad weather for a week. On July 0th we made the Greenland coast, a place called Cape Desolation. We went ashore, and found the place was ightly named, for there was not a living being on it—nothing but rocks and icebergs to be seen. We intended to leave he next day, but it blew a gale, and we had to lay there our or five days. All hands began to get home sick. We made a few pictures in the rain.

It cleared up on the 15th, and we sailed for Julianshaab, one of the largest places in South Greenland. The natives were all scared when we blew off steam, having never seen a teamer before. In the morning we went ashore and called on the Governor, who entertained us with a little whiskey and cigars. In the afternoon we made some pictures of the Governor and his family, and some views of the Esquimaux huts. The next morning, about four o'clock, we went about wenty miles in a boat (which they call oomiack), paddled by six Esquimaux girls, who were all dressed in seal-skin uits. We took a picture of a cathedral built nine hundred ears ago by the Northmen. Did not get back until two 'clock the next morning, almost eaten up with flies and mosquitos. We sailed again for a place called Kaksimuet, bout a hundred miles farther north. In the evening we went on shore to the house of the Governor, who was a jolly ld fellow with twenty-two children. He celebrated our rrival with a dance, and entertained us in good shape. The next day we sailed about sixty miles to the mouth of a lacier, where the icebergs break off, to take some views; worked all the forenoon; went on board to dinner; after inner went back again, and had quite a narrow escape. ust as we were landing, a large berg broke off, which sent he water up twenty feet all over us, and washed away collodion, developing glass, green baize, &c., and came very ear taking us along with them. As good luck would have t, our camera and tent were up high and dry on the hill. We had to go on board and change our clothes, and the aptain did not think it was safe to stop there any longer, o we got up anchor and steamed across the fiord two and -half miles, into a snug harbour. We had not been there more than half an hour when a large berg, two hundred et high, broke off, which sent the water up forty feet, and f we had been in the old place the steamer would have gone up twenty feet on the rocks.

The glacier comes moving slowly down from the mountains, a great river of ice, thousands of feet deep, sometimes ten miles wide, to the fiord or bay at the foot of the mountain. The Alpine glaciers roll down into the warm valleys, and there, warmed by the sun, melt away like a piece of wax before a candle, and form brooks and rivers. But in Greenland, they cannot do that; it is too cold. Therefore, as the ice at the mouth of the glacier is pushed forward to the water's edge, it must break off in pieces and fall in; and such pieces are icebergs. When they break off, the glacier is said by the natives to "calve," or "an iceberg is born."

I can give you no idea of what a beautiful sight it is to see an iceberg break off; but we, who have seen it, will never forget it. Think of a mass of ice as big as the space of ground covered by the City of Boston, falling into the sea, and of the tremendous crash that occurs when it breaks away from its fellows, and they gave it a parting salute as they groan and growl their last farewell. Now see the waves leap up forty feet into the air, washing and lashing the glacier with spray, and sweeping everything away not strong enough to bear the shock; then watch the new-born berg as it rocks in the sea like a huge porpoise, up and down, dropping here and there portions of itself, which dive down and reappear in all directions, and you can imagine faintly what it is to see a glacier "calve an iceberg." It is a long time before the trouble of the waters ends, or before the new-born babe ceases to be rocked, and is still enough to have its picture made. It is a sight one never tires of.

The next day our party started to go on top of the glacier. It was very hard to get on to with our cooking utensils and photographic traps; it was so very steep. We travelled six miles on the top of it. The sight was grand from there. It was about two miles wide, and the length of it we could not tell, as it was hundreds of miles. The depth of it was from five hundred to eight hundred feet. We made a few pictures, ate our dinner up there, and then started back. We sailed the next day for Ivigtut, where the kryolite mines are. Kryolite, as you know, is a mineral which is now largely used in the manufacture of hot cast porcelain glass, for porcelain photographs, and burnt-in pictures, and which, I am told, will soon be introduced into the market. This is the only place in the world where the mineral is found, I believe. It imparts a whiteness and hardness to the glass unequalled by anything else, and can be had in worked sheets sixty inches square. We visited the mines, and intended to make some pictures, but it rained for two days, so we started for Upernavik (which means "Summer-place") about eight hundred miles farther north, and the most northern settlement in Greenland where there are any white people. We steamed at half speed on account of the fog, as there was danger of running into the icebergs. We crossed the Arctic Circle July 31st. We sailed along for a few days, and made instantaneous pictures of icebergs. August 3rd we lowered a boat, went ashore, and shot about fifty ducks. The 4th, the sun shone forth for twenty-four hours for the first time. We stopped at a place called "Sanderson's Hope," and made a picture of a mountain 4,500 feet high. We also collected a quantity of duck's eggs. We arrived at Upernavik on the 6th, a place of about two hundred and fifty inhabitants; went to a dance in the evening in a cooper's shop. The principal amusement there is dancing, and the principal smell is seal, which smell I smell yet. It was so cold your watch-chain would scorch your fingers. The next day we sailed for Melville Bay. We stopped at a place called "Tursuesak," and took a picture of a house, which is the farthest house north in the world. It was taken at twelve o'clock at night, and cloudy at that. Arrived at Melville Bay about three o'clock in the morning of the 10th; went on deck, and could see nothing but ice; presently we discovered three bears; we steamed towards them through ice about two feet thick as far as we could, when they came towards us, and we shot them all. About seven o'clock we saw three more; all hands were anxious for a shot, but I told them to let me shoot first with the camera, which I did, and got two very good negatives of them from the topgallant forecastle. Walking on the ice presently, they came nearer, and all hands shot and killed them. We saw two more in the afternoon, but could not get them. We were packed in the ice all the next day, and could not get out. The ice made about two and a-half inches at night. I made some pictures on the ice, but with poor success, owing to so much reflected light. I could not use my bath stronger than eighteen grains. I made negatives 14 by 18, with a view-tube, smallest opening, in two seconds. The next day the wind changed and broke the ice up. That night we moored alongside of an iceberg. It snowed all night. We worked all the next day making some views of icebergs, and at night took the midnight sun—three negatives—at ten, eleven, and twelve o'clock. The next day we got high and dry on the ice, and had to stay there two days. We began to think we should have to winter there, for all we could see, for miles and miles, was solid ice. This was in latitude 75°. We wanted to get through Melville Bay, and so farther north to Smith's Sound, but had to give it up.

August 19th we started south. It snowed all night and froze hard, and we began to think it was time to be home. On our way back we stopped at Upernavik for a week. I made some pictures of the natives and their huts, sledges dogs, &c. When we went to get up anchor to leave, we found an iceberg grounded on it. It took about four hours to get clear of it. We sailed down the coast to Jacobshaven, where there is a very large glacier, but could not get to it, owing to there being so many icebergs in the fiord. We could not get within ten miles of it, even with a small boat, so I made some negatives of the icebergs there, and the next day we started for Disco, and made some views of some high cliffs, and of a whaler that was wrecked there. That finished my photographing in Greenland. I made between three and four hundred negatives.

September 16th was pleasant, and we worked all day packing and securing things for sea. All hands were in good spirits with the thoughts of going home. Went on shore in the evening to have the last dance and to say farewell.

September 17th we left for home. The Governor fired six cannons when we left. We arrived in Battle Harbour, on the Labrador coast, September 23rd; found some newspapers there, a thing we had not seen for three months. We left the next day; arrived in St. John's September 26th, and, in a fortnight from that time, we were at home, safe and well.

My great trouble, while away, was reflected light. Everything worked flat, and I could not force the negatives up: the stronger the bath the flatter the negative.

My friend, Mr. Critcherson, of Worcester, was with me, and I suppose no one ever photographed farther north or in colder weather than we did; but we were well repaid. You shall see prints from our best negatives soon.

Correspondence.

DIRECT CARBON PRINTING.

Dear Sir,—I will just describe a notion I have conceived for simple carbon printing without transfer; it has been partially carried into effect, and pictures have been got. I conceived the notion from floating albuminized paper; viz., instead of floating the pigmented side of the pigmented paper on the bichromate solution, simply reverse the proceeding, and float the back of the pigmented paper instead of the pigmented side; allow double the time on the bichromate solution, so as to allow the solution to thoroughly permeate the paper, and render sensitive the pigmented side next the paper only; allow to dry, and print from ordinary negatives as for silver printing. The image will be slightly seen when taken from the printing-frame, and a print can be developed in warm water.

I tried the Autotype Company's paper, but found it apt to slip off, the paper being prepared, I should think, for transfer. I succeeded better with paper I pigmented for myself from common Russian glue. I have a great notion that good prints could be got in this way. I was the most troubled with the samples of bichromate of potass, as they are invariably acid unless specially prepared for photo or carbon printing, and render the tissue insoluble, and make you think you have over-exposed.

Has Mr. Blair or any other experimentalist tried by floating through the paper? I should like to know.—Faithfully yours,

A. Whitham.

[On a little reflection our correspondent will see that it is the exposure, not the sensitizing, which must be effected from the back of the sensitive film. The action of the light is to harden and render insoluble the surface it first impinges on, gradually penetrating deeper and deeper. When paper coated with a layer of sensitive pigmented gelatine is exposed under a negative, the light which, passing through the transparent parts, penetrates, probably, the whole thickness, when passing through the semi-opaque half tones only penetrates a portion of the layer in immediate contact with it. If then the tissue be immersed in warm water, the gelatine layer in the parts in contact with these half tones, being soluble in its inner portion in contact with the paper on which it rests, is melted there, and the thin insoluble layer forming half tones is necessarily floated away with the melted part upon which it rested. And this must happen independent of any method of sensitizing.—Ed.]

HEAT, AND ABSENCE OF ACTINISM.

Sir,—At the beginning of last week, having carefully prepared everything for taking some instantaneous stereoscopic pictures, I began operations about 9 a.m. between Warrington and Chester. Bath, 40 grains of silver; collodion, Rouch's bromo-cadmium, with an extra dose of bromide added, iodized rather more than three years ago; also some of Blanchard's two months old. The light was wonderfully good for Cheshire, and, with full aperture of a pair of 4½ inch focus single lenses, I obtained several excellent negatives, using a falling shutter behind the lenses. Two days after this (14th) I went to Greenhithe, feeling confident of getting some nice views of passing vessels, &c. At one time of the day, when the light was apparently good, with the full aperture of a pair of combination lenses 3½ inch back focus, I could only develop the very faintest image, and, in short, got nothing worth having for my trouble. This was certainly the hottest day's work I ever did. In India and Singapore, in the full blaze of the sun, I was never so much distressed, though dressed in the same white clothes on each occasion.

The tent I was using last week, constructed by a good London maker, and only recently turned out, caused me to use several highly unparliamentary expressions, on account of the quantity of dust and hairs falling from the cover, to say nothing of the wooden joints, which were all to pieces, and apparently had nothing but glue to hold them together. The thought of the £6 10s. paid for this desirable article drew forth a deep sigh, mingled with a hearty curse on the maker.

The next pleasing little episode was the giving way of the leather tongue which is used to open the dark slide. I advise the very eminent maker who supplied it, for the future to screw on a small metal plate inside the lid. I think "Aliquis" met with a similar misfortune not long since; it is, however, the first time I have had this happen for the last ten years.

It is a wonder to me that amateurs do not go in more for stereo pictures on a 7¼ by 5¼ or 4¾ inch plate; as transparencies in a large stereoscope, which I saw at Messrs. Murray and Heath's, the effect is charming.—I remain, yours, &c.,

July 20th, 1870. A Used-up Photographer.

RETOUCHING OR SCRAPING PHOTO-ENGRAVED PLATES.

Dear Sir,—With regard to Mr. W. T. Hulland's comments on the meaning I attach to "untouched by the graver," and also to what I said respecting the use of the scraper, I should before have replied out of courtesy to him, had I not been such a trespasser on your space. The "Old Photographer" also takes the matter up, in order to show that I am not "technically accurate on what constitutes touching." He says also that I would gain more general credence if I were not so absolutely sweeping in my comments. By-the-bye, the besom of truth is usually considered uncompromising when it sweeps down the cobwebs of error, and it often raises "a pretty dust," but science and history are always the better for the application.

With regard to the use of the scraper, I was not thinking of ure mezzotint, a process now little used, and one which must ways be expensive in proportion to the fineness and quantity detail which has to be formed. I had in view mixed mezzo- nt, or the modern style, in which the detail is chiefly put in first etching the plate, and colour is given by the mezzotint "rocking tool," the scraper being used to *remove* colours from e high lights and half tints.

Now, with regard to my plates, I assert that it is impossible, ing the scraper, even as in pure mezzotint, to put in *true* tail—the detail in the original photograph—almost micro- opic detail in some instances. My plates can be scraped at a st of from 5s. to 60s., say from carte-de-visite up to 12 by 10 bjects, and the detail may be as elaborate and minute as only otography can give. A novice, with a few lessons, can, if ssessed of some artistic *nous*, develop in a few hours work ly slightly hidden by surface tint on the virgin plate, but hich, if it had to be rendered in pure or mixed mezzotint, would x the skill even of a Cousens. My photo-electric process has t yet had the development of which it is capable, with little st, from such skilled artists as Cousens, but I believe its day ill come. There has been little commercial demand of late ars in this country for plate printing, and John Bull is gene- lly unwilling to try new-fangled things, and therefore sticks in e old familiar ruts, and leaves those who would help him either starve, or to bear down opposition by dogged perseverance.

To return to the use of the scraper, I would say that it is ossible to use it as "dry point," and by this means to put lour in the darks; still, no one, unless he were in the "back- oods" with no other tool but his scraper, would so use it, if he ad a roulette, or a lozenge graver or an etching needle beside im. True, a clever "cuss," as brother Jonathan would say, ight do much even with an old steel skewer. But when I rote I was not thinking of *tours de force* with which necessity, e mother of invention, might astonish us.—Yours truly,

July 23rd, 1870. DUNCAN C. DALLAS.

OL. WORTLEYS PRINTING AND TONING BATHS.

SIR,—I read with interest the short paper Lt.-Col. Wortley as good enough to send you for last week's NEWS on "Print- g with Fumed and Washed Paper." Two particulars, how- ver, I should very much like to know.

1. For what purpose is the nitrate of lead added to the bath?
2. How is the bath of double chloride of gold and potassium repared?—Yours respectfully, INQUIRER.

[The practical fact that the addition of other nitrates besides hat of silver are of use in the printing bath has been pretty ell established by the experience of skilful printers. The heoretical reasons for the advantage have been the subject of uch discussion. One simple reason is tolerably obvious where omewhat weak baths are used; it is, that the solvent power of ny liquid is reduced in proportion as it is charged with any utral soluble body, and hence a bath weak in silver is much ss likely to dissolve the albumen on paper floated when harged with neutral salts than when it is not so. The double hloride of gold and potassium may be formed either by neutral- ing the acid solution of chloride of gold by the addition of rbonate of potash and crystallizing, or by the mixture of lutions of chloride of gold and chloride of potassium in their quivalent proportions, then evaporating and crystallizing. e shall be glad to publish any suggestions which Col. Stuart ortley may be able to give our correspondent.—ED.]

WASHED AND FUMED PAPER.

DEAR SIR,—I read the article in last week's NEWS on Washed and Fumed Sensitized Paper" very carefully I hought it just what I wanted, as during the hot weather we ave had for the past month I found it impossible to keep nsitized paper for one day without turning yellow. Col. tuart Wortley's experience made it everything that I could esire, and I resolved to try it.

I have tried it, and I am very sorry to say I cannot confirm hat has been written about it. I tried three different albu- inized papers, two of which were no good whatever; they ave poor prints, printed very red, especially in the shadows, nd toned mealy. The third paper I tried, a very brilliant one, ave very good results, but not equal to prints on the same paper ithout being washed and fumed. The washed paper kept well, nd I tried it with the paper I found most suitable, for a few ays, but had to give it up on account of the great waste from stains; that the stains were caused by the washing and fuming I have not the slightest doubt, as they disappeared at once on returning to my ordinary practice. In trying the process I treated the paper to the letter as recommended in the NEWS.

Hoping you will hear of greater success elsewhere, I remain, yours, &c., J. STEWART.

PS.—I enclose a few prints, the results of my experience. Nos. 1 and 2 are printed on Marion's Saxe and Rive paper, and No. 3, which I found best, on Trapp and Co.'s Rive.—J. S.

[The specimens enclosed by our correspondent are not of a character to recommend the process, but they are, we can assure him, very different from those of Col. Stuart Wortley, produced by the method he has described. There are two or three points in which our correspondent may possibly secure improvement. In the first place, the washed paper has probably acquired a condition of too complete dryness, and perfect desiccation has always a tendency to produce flat, weak prints, like those forwarded. There is more danger of securing perfect desiccation in washed paper than in paper on the surface of which a soluble salt remains. In the next place, it is possible he may have washed too thoroughly; he has probably not fumed thoroughly enough. The stains running from the corners of the sheet are suggestive of some want of clean fingers. One brown stain is very suggestive of fingers which have been in contact with hypo.—ED.]

COL. STUART WORTLEY'S PICTURES.

SIR,—Your review of my works gives Marion and Co. as their publishers. That firm do not publish them; my publisher is Mr. Sheldon, of 31, Ely Place.

The importance to a work of being well published is my excuse for asking you to correct the error by inserting this letter.—Faithfully yours, H. STUART WORTLEY.

Proceedings of Societies.

FRENCH PHOTOGRAPHIC SOCIETY.

A MEETING of the Society was held on the 1st inst., M. DAVANNE, vice-president, in the chair.

M. Adam-Salomon was elected a member.

M. GONDY presented the Society with a collection of portraits, and explained a novel method of lighting employed by him.

M. LECOURT read a short communication on a means for preventing the desiccation of the wet collodion plate when kept in the dark slide for any lengthened period. The result is arrived at by placing at a very short distance in front of the sensitive plate a second sheet of thin glass, well polished; in this way evaporation is prevented, and the plate may be retained in the camera for upwards of an hour without undergoing any apparent amount of drying.

M. DAVANNE, in the name of the committee, announced that the appeal on behalf of the family of M. Niepce, made to photographers through the medium of the press, had, so far, met with success.

M. ADAM-SALOMON, who is now preparing a bust of the deceased philosopher, has forwarded the following letter to the Society:—"In confiding to me the task of reproducing the features of the late M. Niepce de St. Victor, to mark his last resting-place, you have conferred an honour upon me. I was well acquainted with this modest man, this disinterested philosopher, who died in a state of poverty after contributing by his inventions to the wellbeing and fortunes of others. You will allow me, therefore, gentlemen, when my work is terminated, to present the same to you, and, in accepting it, you will accord me the most delicate recompense, for to perpetuate the memory of useful men is almost to find oneself in their company."

M. DAVANNE read a paper on the preservation of dry Taupenot plates (which will appear in our next).

MM. GEYMET and ALKER explained a method of mechanical printing by means of printer's ink from gelatine reliefs. The photographic plates for printing were easily produced, the difficulty of the process laying entirely in the printing off of the copies. This was done in a manner similar to copperplate printing, and, inasmuch as the latter is an art which required a period of upwards of ten years to perfect, it is not unreasonable to anticipate that a considerable time must also elapse before this or any other method of photographic printing arrives at perfection.

M. DAVANNE remarked that the process of M. Geymet was different to that of Albert-type, as M. Geymet would have the Society suppose, for whereas in his process the non-isolated portions of the film were washed away with water, and a relief thus produced, in the Albert-type the exposed surface was merely moistened with a sponge, and treated in every way similar to a lithographic stone. The latter was, therefore, a lithographic process, and the former an engraving process.

MM. **Geymet** and **Alker** described a method for producing photographs upon letter weights and other objects of glass. A printing material called polychrome paper is employed, which is purchased in a sensitive state, and printed in a pressure frame in the ordinary way. When printed, toned, and fixed, it is placed in warm water, and the film thus separated. The print, even in the darkest parts, is perfectly transparent, and, therefore, capable of being employed as a transparency in many ways. The film is carefully washed, and then placed upon a glass surface previously coated with gelatine, and slightly moistened for the operation. All creases or unevenness are rubbed down by means of the finger nail or a tuft of cotton-wool, and the print finally coated with a mastic varnish composed of—

Canada balsam	100 parts
Oxide of zinc	20 „

M. **Scamoni** presented some mechanical prints, some produced by means of an engraving, others by a typographic, process.

MM. **Romain-Talbot** and M. **Joute** submitted to the inspection of members photographic apparatus of all descriptions, made from ebonite.

Talk in the Studio.

The War and Photography.—The pains and penalties of war rapidly make themselves felt in very unexpected quarters. A distinguished English landscape photographer, whose charming views of Alpine scenery are familiar throughout the world, has recently had his summer's work on the Rhine cut short, and that with scant courtesy from the Prussian military authorities, by whom, whilst engaged with his camera, he was arrested as a French spy. He was placed between two soldiers and marched off into the presence of an officer, by whom he was interrogated. His nationality and the innocent nature of his occupation were easily made apparent, and he was dismissed with an imperative caution not to attempt to take views of any kind in that district during the war. It is scarcely necessary, perhaps, to hint to intending photographic tourists the wisdom of giving the theatre of war a wide berth this summer.

Proctor's New Star Atlas.—A correspondent points out that we expressed no opinion of the quality of the photo-lithographic part of this work—so ably undertaken by Mr. A. Brothers—and of the suitability of this application of the art to the purpose in hand. We have simply to say that by no method could such excellent results have been achieved. The plan of producing the originals on a large scale permitted the utmost precision and accuracy, and the reduction and reproduction by photography and photo-lithography secured equal accuracy and clearness in the published maps. The work is most admirably executed in all respects by Mr Brothers. Mr. Proctor's testimony to the fact that to the assistance afforded by Mr. Brothers the successful appearance of the work is due, is very emphatic, and the author adds that "nothing but the great interest Mr. Brothers takes in the progress of science could have induced him to devote so large a share of his time and attention as he has actually given to the details of this work; and I wish it to be clearly understood that his association with it has not been a business one (though all business details have been skilfully managed by him), but scientific and friendly, and of such a nature as to put me under great obligation to him." Nothing could be more handsome than this expression of the service Mr. Brothers and photography have rendered to Mr. Proctor and astronomy.

To Correspondents.

C. H. R.—The scum which arises during development, and issues in a foggy powdery deposit on the plate, which may be removed by friction, may arise from a variety of causes. Insufficient acid in the developer, or the use of impure acetic acid, will produce such an effect. The accumulation of organic matter, chiefly ether and alcohol in the bath, is a common cause. Sometimes it arises from the collodion, but very rarely.

J. H. Redin.—The letter was duly addressed and forwarded.

Duncan C. Dallas.—Mr. Dallas writes to say that the rectification of Messrs. Leefe and Petty in relation to the Pretsch controversy scarcely rectifies anything, and sends us copies of a correspondence between himself and these gentlemen, in which he insists on the fact that he never led them to believe that the Photo-galvanographic process would "produce copper-plate printing standing in no need of the engraver's skill to render first-class impressions on paper." He believed the process "workable," but not "perfected." We regret that the demands on our space do not permit us to give insertion to a long correspondence in detail on a purely personal question. The portion of Mr. Dallas's letter which possesses a general techinical interest appears in another column.

W. B.—Iron development, with free use of acetic acid, is intended to be used. It is not necessary to wash the preservative off the plate. 2. It is probable that the nitrate of silver you used to intensify was acid with nitric acid, which, with pyrogallic acid, is a very powerful retarder.

Chloride.—Add hydrochloric acid to your washing water. We have described several print-washing machines in our back volumes, in some cases with diagrams and detailed instructions. If you will state what kind of a machine you desire, we can probably refer you to detailed descriptions. Almost any of the dealers will supply such machines.

C. E. F.—So far as we have found from personal experience, or learned from the statement of the experience of others, Tunicare may be used with perfect safety, as it does not injure the bath.

A Desponding Amateur.—As a rule, a collodion made with good materials, and iodized and bromized with cadmium salts, will keep some years in a cool, dark place without injury, and, in fact, will improve with age. A variety of circumstances, however, may at times interfere with this keeping. The quality of the pyroxyline, the quality of the ether, the presence of alkaline salts, &c., may cause decomposition, in which acetic ether, &c., may be produced, which cause the acrid fumes you mention. The collodion will be dark-coloured, will have a pungent smell, yield a porous film, and will be insensitive, and yield a foggy, grey image. Mr. Gordon's dry process is unquestionably one of the best. Mr. Keene has retired from business himself, but the business is still carried on at Leamington.

An Old Subscriber.—We cannot tell what construction the Inland Revenue authorities might put on your use of an old brougham fitted up for photographic purposes, but we should have no hesitation in making the experiment, and trusting to chance for the issue.

Venator.—You will find, if you read the instructions again, that landscapes are distinctly under consideration, not a building with straight lines, in which accuracy is of vital importance, and error so easily detected. 2. Common water will serve. See Col. Stuart Wortley's remarks in our last.

Perseverance.—A saucepan with a good enamelled lining will serve for boiling a silver bath. If it were thoroughly cleaned after warming a toning bath, there would be no risk to the silver bath. 2. We can only suppose that some trace of silver had been in contact with the brush. 3. If the materials be pure, and the prepared paper be kept dry, it will keep good a long time; but we prefer it freshly prepared. 4. It is clear that your bath has been in a very acid condition. You may safely continue adding the carbonate of soda solution until there is a slight permanent turbitity. 5. Excess of acid, the presence of various kinds of foreign matter, &c., will cause a bath to work unsatisfactorily, and render long exposure necessary. An old bath is rarely as good as a comparatively new one, after any method of doctoring.

James Bennett.—The morocco-like texture of the film is due to an imperfection of the collodion. It may proceed from the use of an unsuitable soluble cotton, or from the use of solvents containing too much water, or from the use of salts of cadmium. If it proceed from the character of the cotton, the defect will disappear as the collodion gets older, or it may be remedied by agitating the collodion with a little dry carbonate of potash or soda, and, after subsidence, decanting. If the presence of too much water in the solvents be the cause, there is no remedy.

Miss Homer.—We do not know anyone who gives lessons in photographic colouring in Birmingham. You will obtain much information on the subject in a little work published by Newman, of Soho Square, price one shilling, entitled "Harmonious Colouring applied to Photographs." The best mode of securing employment in such an occupation is to advertise in the Photographic News. The rates of remuneration vary considerably with the class of work and the skill of the artist.

C. W. H.—Mr. Gordon's gum process is one of the best of dry processes. You will find the question discussed in our issue for May 13th last. Some of the back numbers of the Year-Book are accessible, but not all.

Flat Baths for Negatives.—Mr. Morley writes, for the information of W. W., that he has a large flat bath in stock, 38 by 28 inches, and 2 inches deep, made with wooden frame and plate, glass bottom and sides. It has no well.

D. Welsh.—Thanks. Your plan is a good one.

Simpleton, and several other Correspondents, in our next

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 622.—*August* 5, 1870.

CONTENTS.

PAGE
)n the Production of Ceramic Photographs 361
Echoes of the Month. By an Old Photographer 362
Foreign Miscellanea 363
Dr. Vogel in New York 364
American Correspondence 364
Photography in the East. By "Viator" 365
An Umbrella Tent 366
On the Employment of Cameras with White Interiors 367
Note on the Preservation of Dry Taupenot Plates. By M. Davanne 367
PAGE
The Preparation of Collodion 368
Robbery of Photographic Materials 369
Correspondence.—Col. Wortley's Photographs—Retouching Photo-engraved Plates—Flat Baths *v.* Vertical Baths 370
Proceedings of Societies.—Oldham Photographic Society—Liverpool Amateur Photographic Association 371
Talk in the Studio 371
To Correspondents 372
Photographs Registered 372

ON THE PRODUCTION OF CERAMIC PHOTOGRAPHS.

Chapter I.—Introductory.

EALLY good photographic enamel is probably the most fect form of photograph which can be produced. The uisite surface upon which the image is printed renders accuracy all the delicate detail in the negative, which paper print is often lost; and the enduring nature of material secures not simply permanency, but—using word in its limited conventional sense—indestructity. Singularly enough, although the exquisite beauty he photographic enamels of Lafon de Camarsac—who cknowledged *facile princeps* in this branch of the art—been always acknowledged, but few persons have empted similar work in this country. The modes of ducing such pictures have been, indeed, until very ently, the subject either of patent, or profound secresy; it is to these causes, probably, at least in part, that nparatively little progress has been made, and the art le practised.

here are two methods of producing photographic mels, both of which have been the subject of patents this country. The first consists in the production of image on a film of some hygrometric substance, which isters the graduated action of light through various ts of the negative by producing an image with varied dations of adhesiveness, so that a ceramic powder lied sticks to the surface in different proportions: freely he shadows, and less freely through the various gradas of tone, and refusing to adhere altogether in the tes. This image being transferred to a ceramic sur-, and fired in a muffle furnace, vitrifies and gives a manent enamel picture. The second method consists, , in the production of a positive image in silver, of the e character as a transparency; and then converting image into some other suitable metal—such as platin, palladium, manganese, iron—or a combination of able metals, or metallic oxides. This image, when nsferred to a suitable ceramic surface and fired, also s an enamel picture. There is a difference, however, he mode of vitrifying the images obtained by the two hods, which it may be well to note at the outset. In latter method the vitrification is usually secured by slight fusing of the enamel surface, and the incorpoon of the metallic image with the surface whilst the latter a state of fusion. If the surface be unsuitable for on, the image, before firing, is covered with a flux, ch fuses in the muffle and covers the image with a eous surface. In the first-mentioned method a flux is ed with the ceramic powder, which readily fuses at a nparatively low temperature, and so aids in vitrifying image.

The first published communication on the subject of photographic enamels was made by M. Lafon de Camarsac in the *Comptes Rendus*, in 1855. The information is vague and general, giving no details, but is sufficient to show that the author was conversant with both the methods we have indicated. The precise method employed then and now by that gentleman remains a secret. In this country, during many years, Mr. Barnes continued experiments in enamelling, his chief aim being to burn-in silver images toned with gold. His results were interesting, but not sufficiently successful for any practical purpose. In 1860 Mr. Joubert patented a method of producing enamels by the application of ceramic powders to an adhesive image, in which a bichromate was the sensitive agent. Mr. Joubert's patent is still in operation. The method to which attention has been called, during the last year or two, by MM. Geymet and Alker, is closely analogous to that of Mr. Joubert. In 1863 M. Poitevin patented a method of a similar character, in which a mixture of perchloride of iron and tartaric acid formed the sensitive agent. This patent has, we believe, lapsed. In 1864 MM. Tessie du Motay and Marcschal patented a method of producing photographic enamels by converting a positive image in silver into gold and platinum, covering it with a flux, and firing it. Two years later Herr Grune patented a method based on the same principle, but of a much more comprehensive character, a greater range of metals being employed. Very fine results are produced by this process. About the same time Mr. Wm. Firling published a method of producing photographic enamels by a modification of Swan's carbon process, ceramic colours in powder being mixed with the chromated gelatine instead of carbon. On firing the gelatine, of which a very small proportion was used, it was deflagrated by the heat, and the image vitrified. More recently Mr. Henderson has worked out a process, the character and details of which are kept secret. Whether due to the excellency of the process, or the skill and perseverance of its author, we are unable to say; its results are undoubtedly the finest which have been produced in this country. Common rumour identifies Mr. Henderson's method with those in which a silver image is converted into one of some other metal yielding a fine colour when burnt-in.

With the exception of Mr. Joubert's method, the monopoly in none of the processes is now, we believe, protected by law, the patents having been suffered to lapse. A comparatively large field is open, therefore, for experiment to any one disposed to test the various methods. So far as our experience and observation have enabled us to form a judgment, the method of Herr Grune is the easiest to work and the most perfect in result. We have had opportunity of going carefully through all the operations with that gentleman, and receiving full information as to the formulæ and manipulation; and, whilst we shall offer a *resume* of the various processes for the purpose of giving completeness to a short series of articles on the subject, it is in relation to Grune's process we shall be able to give the fullest practical information, the details of which we shall commence in our next.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

War and Photography: Arrest of Mr. England—The Photograph of "Grip"—Washed and Fumed Sensitive Paper—The War and Saxe Paper—Adam-Salomon's Bust of Niepce de St. Victor—"Rembrandt" Portraits.

I was somewhat startled, the other day, when I was asked by a friend if I had heard that England had been attacked and plundered by the Prussians. My alarm was removed and my sympathy quickened when he explained, however, that it was Mr. England, and not England as a nation or territory, and that the proper statement of the case should have been that Mr. England had been robbed during his continental campaign of a pair of lenses worth £20, and subsequently arrested by two Prussian soldiers as a French spy. Fortunately, the delay and ignominy were of brief duration, as he was soon able to prove that his occupation was altogether of a peaceful character, and that he was a votary of Phœbus Apollo, not of Bellona. I was glad to learn subsequently that he had recovered the lenses, after much bother and the disbursement of cash in "tipping" officers of justice. His photographic operations for the season were, however, strictly prohibited by the military authorities, and he has left Rhineland in disgust, his summer's work practically ended. This is perhaps one of the most trivial of the evils caused by the insane war now pending—a trifle compared with the terrible horrors which must ensue; but such trifles are serious when they touch our immediate interests. Who does not echo the wish of simple little Jeanette, in the song, that they who make the quarrels "should be the only men to fight"?

And so "Grip" has been photographed! "Grip the clever, Grip the wicked, Grip the knowing," as the bird, when in faithful attendance on *Barnaby Rudge*, described himself prior to a rapid reiteration of his satanic character. Merely a stuffed raven in a small shabby glass case, he was so glorified by association with Charles Dickens and his works, so grandly immortalized by his imaginary history as a leading character in *Barnaby Rudge*, and had acquired such a gentle interest as a personal favourite of the great novelist, that he became the subject of a hot rivalry in Christie's sale-room, and was eventually knocked down to Mr. Nottage for one hundred and twenty guineas! His photographs are now announced as ready, and will, doubtless, form a treasured souvenir, in thousands of homes, of the departed genius whose wide humanity, as much as his brilliant powers, made his name a beloved household word wherever the English tongue is spoken. I have not seen the picture, but I am told that the rustic work from Gad's Hill, by which he is surrounded, is very effective. It is the peculiar charm of photography, in such cases as this, that it presents not simply a copy of the original, which the finest drawing or engraving must be, but absolutely an autograph of the object, partaking of the essential identity of the original, and giving a closeness and subtlety to the association which nothing else could possess.

The examples I have seen of the result of washed and fumed sensitive albuminized paper are singularly variable. Presuming that the published large instantaneous photographs of Col. Stuart Wortley are produced by the plan he has described, it must be pronounced most efficient, as the prints are excellent. On the other hand, some prints produced by a friend who had tried the experiment were miserably weak and flat. The method possesses so many advantages, especially in hot weather, that it seems desirable, if possible, to trace the cause of the discrepancy. I am strongly disposed to attribute it to the cause you mentioned in a recent number, namely, excessive instead of slight washing of the paper. A slight examination of the accepted theory of silver printing seems to confirm this idea. The *role* played by the free nitrate on the paper may be thus stated: nitrate of silver is not in itself reduced by light, but chloride of silver being reduced, liberates chlorine; this in its turn attacks the free nitrate present, forming fresh chloride of silver, which is again reduced; and so on in succession, the constant accretion and constant reduction of fresh chloride of silver going on until a vigorous image is produced by light. When no free nitrate is present the original layer of chloride of silver only can be reduced, and unless it is present in large quantity a vigorous image cannot be secured. The advantage of ammonia is, that it neutralizes nitric acid liberated in the course of printing, securing rapidity, and permitting vigour to be obtained with a much smaller proportion of free nitrate of silver than would otherwise be necessary. But if no free nitrate be present, ammonia will not act as a substitute. Hence it appears to be wrong to wash thoroughly, or to use distilled water for the purpose. The generally accepted opinion of the carbonate of silver paper introduced some time ago was, that it was paper prepared and excited in the ordinary way, but washed with water containing a carbonate, so that a trace of carbonate of silver was left on the surface. This paper, comparatively insensitive after the washing indicated, readily yielded, after fuming, vigorous prints. If this be so, the suggestion as to the mode of working out the plan of washing and fuming is tolerably obvious.

Is it true that there is a likelihood of a scarcity of *Saxe* paper in consequence of the war? I have heard it rumoured that such is the case. I cannot see any probable reason for the supposition. The progress of the war is not likely to destroy, even if it in any degree impede, the manufacture of paper, and even if the import be more difficult, and consequently be delayed, I should not imagine that the importers in this country have no stock in hand. Indeed, as age is one element of excellence in photographic papers, it is not probable that in this country there is so little enterprize that a famine will arise the moment the supply from the mills is stopped or diminished.

It is pleasant to note a grand act by a great artist. Adam-Salomon is evidently as noble in heart as he is brilliant in genius. A committee of the French Photographic Society commissioned him to produce a life-size medallion sculptured bust of Niepce de St. Victor for his tomb. The great artist, sculptor and photographer, undertook the task, executed it, as I learn, admirably, and, in the most graceful terms, presented it at his own cost. M. Adam-Salomon is one of the committee for receiving contributions to the Niepce St. Victor fund, I believe. Any of your readers wishing to contribute to such a fund will doubtless have pleasure in doing it through the hands of the great portraitist.

From what I have seen of the American "Rembrandt" portraits, I do not think that the style will ever become popular in this country, and I must confess that I hope it will not. The argument of Mr. Kurtz in their favour, quoted in your last, will not, I think, hold water. He says that commonplace or ordinary faces, when lighted in an ordinary manner, will always remain ordinary. And why should they not? Molly the cook has a fat, chubby, good-natured face, which, lighted in an ordinary manner, will present the picture of a respectable cook; but lighted in an extraordinary manner, it may, by startling effects of light and shade, be made to suggest a *Lady Macbeth*. Is this desirable? Your milkman may be a very estimable and sensible man, but if his photograph present him with a glance which should "over awe the world," the portrait will assuredly be an absurd practical solecism. I have been reminded by some of the "Rembrandts" of the effects in sculpture which at one time prevailed in the States, that of Elijah Pogram, for instance, described by Dickens as a "statue of the Elevated or Goblin School, in which the Honourable Elijah Pogram was represented as in a very high wind, with his hair all standing on end, and his nostrils blown wide open." This overstepping the modesty of nature in photography is most intolerable. So far as the study of varieties of lighting is an instructive process, and may lead to a higher mastery of this important branch of the portraitist's art, it is all very well; but the elevated or goblin school of actual portraiture is more offensive in photography than even in sculpture.

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Foreign Miscellanea.

The French Photographic Society, having decided upon erecting a monument to the memory of Niepce de St. Victor, commissioned, a few weeks back, M. Adam-Salomon, whose fame as a sculptor is equal, almost, to that he enjoys as a photographer, to execute a medallion of the deceased philosopher. On the 7th ult. M. Salomon invited several of the more distinguished members of the Society to view his work, which was completed within a very short time after the wishes of the Society had been made known to him. The medallion is life-size, and will be cast in bronze, and subsequently inserted in a slab of marble, which the Minister of Fine Arts has already promised. As previously stated, M. Adam-Salomon has absolutely declined to accept any honorarium for this labour of love, of which he begs the acceptance of the French Photographic Society.

The models to be awarded to the most deserving exhibitors at the Paris Photographic Exhibition have not yet been distributed; it is possible that the names of the successful candidates will not be published before the end of this month, at the close of the exhibition.

An illustration of a new photo-zincographic engraving process, invented by MM. Lefman and Lourdel, appears in the *Moniteur de la Photographie* for last month. The process, which consists in placing a bichromated gelatine image upon a zinc plate, and then etching the latter with acid, is said to be without difficulty, and of considerable promise. It is suitable for reproducing engravings, drawings, and the like, the cost of preparing the blocks varying from ten to fifteen centimes per square centimetre. The illustration does not go far to assert the importance of the process.

Another work has appeared upon the "Lichtdruck." M. Schrank, the secretary of the Vienna Society, has issued a volume containing much information in respect to the process.

Dr. Vogel has arrived at Cleveland, and proposes to continue his travels as far as San Francisco.

Some discussion occurred, at a recent meeting of the Berlin Society for the Advancement of Photography, as to the manner in which the neat little descriptions printed in white upon the black ground of England's stereoscopic view, are produced. It was deemed most probable that a diapositive of a printed description was in the first place secured, and the collodion film thus obtained was attached to the stereoscopic negative.

A sensitizing bath of the following proportions is suggested by M. Wilde: if paper sensitized in it is kept until of a yellowish tint, the fixing bath will, nevertheless, restore to the pictures their proper tint:—

Nitrate of silver	1 ounce
Water	18 ounces
Nitrate of ammonia	3 ,,
Alcohol	½ ounce.

Professor Krippendorf, of Aarau, publishes in the *Helios* a long paper on "Simpsontype," which he says is every day becoming more popular in Germany. The gist of M. Krippendorf's remarks is contained in the paper published in the Photographic News of the 8th ult. M. Custer, of Aarau, is occupying himself with the manufacture of collodio-chloride paper for commercial purposes.

M. Lemercier, a Paris lithographer of some note, has purchased the Albert patent for France, and is at present, in company with many other pupils, undergoing instruction in the manipulations at Munich.

M. J. Huck, of Hilchenbach, writes to the *Archiv*, stating that he uses glycerine in his dipping bath in a quantity equal to half the volume of water required. The glycerine not only prevents all tendency to fog, but likewise allows of the prepared plate remaining in the camera for a much longer period without becoming dry. It is necessary to expose the bath thus made up to the action of light for some considerable period before it is taken into general use. Old worn-out baths, if evaporated down and solarized, may be rendered again serviceable by the addition of glycerine in the proportion above referred to.

The attention of the Vienna Society has been called to the Pretsch controversy. That body, however, scarcely understands the difficulty which gave rise to the discussion—viz., whether any engravings issued by Pretsch were absolutely untouched by the graver—but believes that the question has been raised to dispute Pretsch's right or priority of discovery. The Vienna Society are thus led on to make somewhat extravagant statements, claiming for M. Pretsch the sweeping honour of having been the originator of all photo-mechanical printing processes, with the exception of those in which etching with acid is resorted to.

A new photographic paper, yclept the Victoria Glacé paper, has been brought out in Dresden, of which Dr. Von Monckhoven speaks with some warmth.

The Niepce de St. Victor fund gets on but slowly. The Count Aguado heads the list with a thousand francs, and then come MM. Blanquart-Evrard and Eichtal with five hundred each; but the amount promised as yet is very small. It is not generally known that M. Niepce's death occurred in his laboratory while actually engaged upon scientific investigation.

MM. Ohm and Grossman appear to be capable of producing large pictures by means of the *Lichtdruck* process; some reproductions of oil paintings, measuring sixteen by twenty-two inches, have been successfully printed.

The *Photographische Correspondenz* for July has, by way of frontispiece, Kenilworth Castle, by Francis Bedford, printed by the Albert-type process.

The firm of MM. Leon and Levy, with whom M. Blanc has recently associated himself, and whose transparent stereoscopic slides are so universally known, still employ the method of printing with an albumen film, a process of which the details are still supposed to be secret.

In criticising the Philipp light in the *Bulletin Belge*, Dr. Von Monckhoven says, that after a very careful study of the subject, he is convinced that no hydro-carbons or mixture of these with oxygen are capable of furnishing a light sufficiently good for photographic purposes. Hydrogen, saturated with the warm vapour of benzole, and mixed with oxygen, does not yield a twentieth of the light emitted by magnesium. Charcoal burnt in pure oxygen furnishes a very bright light, but one of slight photogenic power. Of all flames he has experimented with, Dr. Monckhoven asserts that given by chloro-chromic acid fed with oxygen to be the most powerful.

In making collodio-chloride, Dr. Monckhoven recommends the abandonment of the chloride of calcium, and the substitution instead of chloride of cinchonine, a salt purchaseable at a very cheap rate, which is extremely soluble even in absolute alcohol and ether, and in no way deliquescent.

M. Maes, of Antwerp, is largely practising photo-lithography by a process of his own, which he has patented. A correspondent in the *Bulletin Belge*, who has paid a visit to M. Maes's establishment, gives a glowing account of the importance and practicability of the invention.

Licht recommends india-rubber cement as the best means of attaching paper labels or masks to negatives. Paste or gum either do not hold the paper fast to the glass, or are apt to remove some portion of the varnish and collodion films, whereas india-rubber dissolved in benzole may be relied upon as a very effective cementing material.

A simple method of effectually removing silver stains is to moisten them, in the first place, with a tuft of cotton wool dipped into a dilute solution of iodine, and afterwards to treat them with weak ammonia.

M. Vidal's statement, that a sensitive plate, if exposed to light in the camera, and then placed behind the yellow glass window of a dark room, becomes attacked by the yellow rays and yields a fogged image, whereas a sensitive plate previously unexposed to light is not affected in the same manner, has been confirmed by results obtained in America, and detailed in the *Philadelphia Photographer*.

The notices of the London International Exhibition for 1871 are attracting the attention of the photographic societies abroad, who seem unanimous in their desire to be represented at that gathering.

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DR. VOGEL IN NEW YORK.

As our readers are already aware, Dr. Hermann Vogel is at present in New York, at the invitation of several of the most influential photographers of that and other American cities. His letters to the Berlin Society for the Advancement of Photography, of which Dr. Vogel is president, are replete with interest, and we quote, therefore, some extracts from his last communication, written a few days after his arrival in the New World.

After referring in an enthusiastic manner to the warm reception he received, and dwelling upon the wonderful magnitude and grandeur of the American metropolis, Dr. Vogel gives an account of his visit to M. Kurtz's studio.

"M. Kurtz was excessively busy. In New York business is conducted in a different manner to what it is with us. The tremendous expenses incurred necessitate an energy of which we at home have but very little idea; and M. Kurtz has to pay a yearly rent of ten thousand dollars. From eighty to a hundred portraits are taken daily, and under such circumstances arrangements of the most simple description, such as M. Kurtz recently described in the *Mitthielungen*, are invaluable. All appointments must be kept with precision, and rapidly fulfilled, for here time is not only money, but money twice over. M. Kurtz had the goodness to allow me to serve as a model. I seated myself on the movable dais, underwent rapid posing, was at once brought into focus, and photographed. A turn of the dais with the foot brought me into profile with the camera, and a second negative was forthwith secured, both pictures being taken with the new globular background. The latter is not conical, as has been erroneously stated, but round, and is made not of metal, but of *papier maché*, its inner surface being rendered coarse with sand.

"Of extraordinary action is the reflector and counter-reflector which M. Kurtz uses. A more simple and effective arrangement can indeed scarcely be imagined, and everything works smoothly and rapidly. Of shutters there are but few, but in lieu there are several sun-screens placed against the glass; only the top light is shielded off with Venetian shutters. A separate window with a singular crooked background is employed for securing pictures of an entirely original character, M. Kurtz obtaining an extraordinary effect in lighting up the model by this arrangement. The favorite style for cabinets is a large bust, in the form of a medallion, produced by printing with an elliptic mask placed between negative and paper, the picture being afterwards covered with a shield of the same dimensions, and exposed to the light until the white margin has assumed a pale grey tint. Other New York photographers have adopted this style to a great extent.

"My second visit was to M. Rutherford, the celebrated astronomical photographer. M. Rutherford is a wealthy private gentleman, who has obtained considerable reputation by reason of his photographs of the spectrum and his successful pictures of the moon. I was exceedingly anxious to see the original negatives of his works, and these he allowed me to inspect most readily. In his garden an observatory is fitted up, in which photographs of the sun are constantly taken. The grinding of the lenses fitted in the telescope that he uses was performed under his own direction, and this operation was one of great difficulty, for it was necessary to take photographs from time to time during the progress of the work, in order that the maximum capability of the instrument might be secured. A second lens of the same kind, measuring ten inches in diameter, he has just completed for Professor Gould, who is on the eve of starting for a three years' visit to South America, to make an observation of the star regions in the southern heavens.

"I saw at M. Rutherford's a series of solar negatives but recently taken, exhibiting in a most marked degree the well-known spots. The shifting of these spots over the sun's surface from day to day, until they disappeared on the western margin, was very apparent, and many of them were to be remarked, after a certain lapse of time, appearing again on the eastern side.

"The most interesting of all, however, was a photograph of the Pleiades, respecting which I have already made a few remarks. Many scientific men have questioned the possibility of securing photographs of this heavenly group, for the Pleiades are so extraordinarily small that pictures of them upon a plate appear but as mathematical points; and I was curious to know how they could be distinguished from pinholes in the collodion film.

"All doubts were, however, set aside by an inspection of the pictures; the stars were distinctly visible, and larger than I had expected. The slight vibration of the atmosphere, the supposed cause of the twinkling of the stars, had caused the image reflected upon the plate to vibrate during the six minutes of exposure, and the bodies appeared larger, therefore, than they really were. What, therefore, in photographic portraiture would be a defect, is here an all important necessity.

"I passed two enjoyable hours with M. Rutherford, but I had still another agreeable surprise in store for the same day, a visit, namely, to the large photographic warehouse of Messrs. Anthony and Co. Whoever pays a visit to this establishment will be able to form some idea of the colossal scale on which affairs are transacted in America. In the first apartment are shown all wooden apparatus, such as printing-frames, pedestals, plate-holders, &c.; in the next, porcelain and glass; in a third, chemicals; in a fourth, papers; in a fifth, albums; in a sixth stereoscopes and stereoscopic pictures; and in a seventh, frames and passepartouts of all kinds: a whole building of three storeys is occupied by photographic requisites.

"The prices charged for photographs in New York are six dollars, paper money (a guinea), per dozen cartes-de-visite, and ten dollars per dozen cabinets, amounts which are by no means excessive if we take into consideration the cost of rent, &c. Curious enough, cabinets are produced in much larger quantities than cartes, but enlargements pay best of all, being charged at the rate of eighty to one hundred dollars. New York has a speciality in porcelain pictures, or, rather, positives printed in collodio-chloride upon opal glass. The effect of these is magnificent, and there is no doubt they would sell well in Berlin, were anybody to take them up in that city."

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AMERICAN CORRESPONDENCE.

Grit Varnish—Rembrandt Effects—The Advantages of Association—Swinging Bath—Hot Weather.

Grit Varnish.—Those who have been accustomed to retouching their negatives have experienced difficulty always in obtaining a "biting" surface upon the varnished film which would render the working upon the same with the lead pencil comparatively easy. Such a surface would, of course, give one much more power and certainty in working, and absolute control over the pencil. Many substances were suggested, such as powdered pumice-stone, cuttle-fish, &c., which, rubbed gently over the varnished film, would obtain the desired end in a measure. But this took much time, for every little place that needed the touch of the pencil first had to be made so that it would "bite;" and, again, the plans mentioned were only of avail on the varnished side of the negative. Milster, Loescher and Petsch, and, probably, all who practise retouching, have found that a few touches on the other side are often of great advantage in improving the qualities of the negative, and that for that work the pencil was useless, and nothing but a brush and colour would avail.

I now have to bring to your notice something that will overcome all the difficulties mentioned, as actual trial has proven, and which is a capital thing. It is protected in this country by a patent, and consists in adding to the ordinary varnish, very finely pulverized glass. Before using, the mixture is well shaken, and then applied to both sides of the negative. A perfect "biting" surface is thus secured, readily worked on with the pencil or brush, and in no way interfering with the printing qualities of the negative, so far as I have yet found.

A coarse or fine surface may be obtained at will by using the varnish at once after shaking, or first allowing it to subside a short time. If used at once after shaking, of course the surface is coarser than when applied a few moments after the shaking. "Berlin" negatives may be produced in the same way by using the glass a little less finely pulverized.

This will be found a great aid in retouching. I will try to get an unbroken negative to you which has been treated with the "grit" varnish.

Rembrandt Effects.—Are your people as wild on the subject of Rembrandt effects, so called, as we are here? About a year ago they were introduced here, and some of them were very pretty indeed. Without having any practical or theoretical knowledge, however, of what Rembrandt effect was, or of the mode of lighting adopted by that great old master, photographers here, in many instances, have endeavoured to work out their own ideas on the subject, and some of the results are very curious. The light is made to play all sorts of acrobatic feats over the subject, without any apparent feeling, purpose, or intention, unless it be to produce a new "effect." Copies of engravings of the works of Rembrandt are easily procured, and if those who are disposed to try his striking method of lighting will study them and be governed by his rule, they will secure very beautiful and effective results. There should be method in all we do, as well as clean hands, and a photograph bearing upon its face the evidence of no good intention or effort after pictorial effect, but, on the contrary, gross mistakes, is of all things most miserable.

It is one of the delightful signs of the times that photographers are continually grasping after further knowledge in the direction of pictorial effect, and that they are making rapid advancement; but, above all, let them not fall into errors more grave than those which have surrounded their old pathways.

The Advantages of Association.—I am glad to see you urging upon your readers the advantages of organizing a national association similar to our own, now in such successful operation. You have stated the case so fully that I could only repeat what you have said; yet there is one point I will touch upon which is specially advantageous, and I will give you a practical example.

I allude to the advantages of an annual exhibition and the assemblage of photographers for an interchange of ideas and the study of work. At Cleveland it was astonishing and cheering to see how many old lag-behinds were awakened, and how many who had been driving along in the same old tracks and ruts for years, were lifted out of them and started in fresh, new, hard roads leading to the elevation of themselves and their beloved art. I enclose you two cartes-de-visite, which I have received from one of our photographers who has worked at the business about twenty years, and who went to Cleveland with ideas somewhat sceptical, and very much "sot in his ways." They are both of the same subject, you will observe. One is marked on the back "Two months before the Cleveland convention and exhibition," and the other "One month after the Cleveland convention and exhibition." What an astonishing difference, and effected in only thirty days! The first is a villainously-lighted, under-exposed, over-toned picture of a very pretty lady subject, carelessly cut and mounted on a common card mount; while the second is much more carefully posed, lighted, exposed, and printed, and finished on a handsome round-cornered mount. The photographer writes—and no doubt he is pleased—"I send you two cards, indicating progress. 'Robinson's Pictorial Effect,' and the Cleveland convention, had something to do with it." Such results are inevitable, if photographers will but keep up their exhibitions and interchange ideas. Art students will make long pilgrimages, and deprive themselves of home comforts for a long time, in order to study the works of the old masters, and they will spend weary days and months and years in sketching from them, thus laying in a store of knowledge, practically, that is to win them fame and fortune hereafter. Should not photographers have like opportunities? And should they not avail themselves of them when they are offered?

A Swinging Bath.—A great deal of annoyance is occasioned very often in the way of pinholes, by floating particles in the bath adhering to the film. This may be entirely avoided by having the bath-holder swung at the centre; and as soon as the plate is dipped, swing the bath-holder sufficiently to throw the plate forward from the dipper until it touches the side of the bath-holder. After sensitizing, it will come up as clean and nice as could be desired. A thumb-screw at one side, to hold the apparatus at any angle, will, of course, be necessary. Usually, when an upright bath-holder is used, it is set leaning backward. Try the other way.

Hot Weather.—We are having a season of unusually hot weather, which seems to extend over the whole country. The thermometer averages about 95° in the shade, and in photographic operating rooms 100° to 110° is no unusual reach for the aspiring mercury. The consequence is, much trouble in manipulation; many sore trials in the printing room, both with the plain and albumen paper.

This must account, too, for any dryness in your American correspondence this time, for the state of affairs I have described is anything but inspiring.—Truly yours,

Philadelphia, July 15, 1870. Edward L. Wilson.

PHOTOGRAPHY IN THE EAST.[*]

With regard to collodions, I have tried a great many but have never found one that seemed so thoroughly good for India as Thomas's. I have kept it iodized for some five or six months all through the hot weather, and never knew it go bad; the only thing I have ever had to do to it after it had been iodized some time was to add about half an ounce of plain collodion to a pint of the iodized, and it then became as sensitive as if it had only been iodized a month. I always kept my collodion bottles in tin cases with about an inch of sawdust between the bottle and the tin, and this seemed to keep it perfectly. Rouch's collodion is, I know, a very perfect collodion for India, but I always gave a preference to Thomas's.

I do not know of any developer that seems to give such satisfactory results, both on the hills and in the plains, as the organic developer. It is easily made, and a properly exposed negative developed with it rarely requires intensifying; but should it do so, a drop or two of the stock solution added to the developer in the glass is sufficient without the addition of any silver. My method of preparing it was very simple.

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[*] Continued from p. 353.

Break into small pieces one drachm of good English glue, and put them into a bottle, and pour on them about a teaspoonful of water. Let this remain to be absorbed by the glue, which is done in from four to six hours; then pour on the softened mass two and a-half drachms of strong sulphuric acid. In a few hours it will be dissolved. Insert a funnel into the mouth of the bottle, and in the funnel put several small pieces of broken glass (this is to prevent the liquor spurting up into your face in the next operation). Now add, drop by drop, strong liquor ammonia, until the solution is alkaline (about one drachm of ammonia will generally be sufficient). When the litmus paper retains its blue colour, add enough glacial acetic acid to redden it. I have never known any difficulty in keeping this solution when thus prepared. For the developer mix—

Iron	3 drachms
Water	12 ounces
Alcohol	2 drachms
Gl. ac. acid	2 „
Lastly, the glue solution ...	2 „

This gives excellent pictures. The development is very rapid, and the ordinary exposure required with Dallmeyer's triplet and No. 3 stop was from ten to thirteen seconds.

For groups I prefer the ordinary iron developer with sugar in it, viz.—

Iron	3 drachms
Gl. ac. acid	3 „
Spirits of wine	6 „
Sugar	6 „
Water	12 ounces

Intensify with iron and citric before fixing in the usual proportions. I strongly recommend iron being kept in a saturated solution; it not only saves the trouble of weighing every time you want to make a developer, but the iron is decidedly improved by being so kept. I fix with cyanide.

I worked a good deal at dry plates at one time, and with tannin plates I had very fair success, but I found that a fifteen-grain solution of tannin was absolutely necessary—nothing less would do; and, again, I did not meet with the same success as in England as far as the collodion goes. In England any good bromo-iodized collodion appears to answer. I tried the collodions of four makers, but could only get on with Keene's collodion, which is specially prepared for dry plates.

If I am not much mistaken, my mode of preparing the plate is exactly similar to that published some time back by Mr. Hughes, viz., after removing the plate from the bath immerse it in another dipping bath of distilled water for about five minutes, then remove it and wash it with a little distilled water, and then put it for five minutes into another dipping bath containing common water, then wash it well for about a minute with common water, and give a final wash with distilled water; pour on it a fifteen-grain solution of tannin containing one and a-half drachms of alcohol in each ounce of solution; pour this on and off some three or four times, allowing it to soak well into the plate; then place it in your draining box to dry, but on no account disturb the plate until it is quite dry, or you will be sure to leave a mark across the plate. I have kept these plates for a month during the hot weather, and never found that they suffered from keeping, but I never tried to keep them beyond a month. Develop with pyro, citric, and silver, as recommended in Russell's tannin process.

The greatest trouble almost that you can meet with is your varnish; it either dissolves the film, or splits, or sticks to your paper when printing. The first evil may be remedied by either covering the plate before it dries with a weak solution of gum arabic, or adding a drop or two of water to the varnish, taking care to let the varnish settle; and filter it before you use it. But the splitting and sticking to the paper are sore trials to patience. I have tried no end of varnishes, and the only three that I have found to be free from these faults are, Thomas's varnish, and the varnish recommended some years back in the Photographic News, which is made by dissolving twelve per cent. purified resin of jalap in alcohol ninety-five per cent. I have never known this stick under any circumstances, and it is quite sufficient protection for an amateur's photographs. The best varnish is made with—

Lac	2 parts
Picked sandarac	1 part
Alcohol 95 per cent.	4 parts

The materials for making varnishes are easily procurable in India, but it is decidedly better to get them sent out to you, as you can seldom buy the gums free from dirt.

Printing is conducted as easily as at home, though I think it takes much longer to print in the shade. I used for a long time the bath containing nitrate of soda and sugar, viz.—

Silver	36 grains
Nitrate of soda	18 „
Sugar-candy	½ grain
Water	1 ounce

You can always get any number of Australian sovereigns if you are in a Presidency town; if not, you can get absolutely pure gold in the bazaar, and your chloride of gold is then easily made.

An excellent plan for keeping albuminized paper is to cut it to the sizes you usually require, and place the sheets in a pad like an ordinary blotting-book, then wrap it carefully round with waterpoof cloth, so as to exclude the air as much as possible.

Paper when sensitized becomes discoloured in a few hours in most parts of India, especially on the coast.

All chemicals should be sent out in bottles so secured that there can be no risk of leakage or evaporation. Ether generally manages to escape somehow. I think the best plan is to place a strong cement round the stopper, tie over this a bladder, and then dip the neck of the bottle into a strong glue. The bottles should be sent out in tin cases with plenty of sawdust; this not only protects them from injury, but also from the heat. I believe most chemicals are sent out packed in this way, but the extra precaution of protecting the stopper or cork is often omitted, and the name of the chemical is seldom on the outside of its tin case.

Pneumatic plate-holders do not last very long in India, and as it is a great nuisance to be suddenly deprived of one if you have been in the habit of working with it, I think the wisest plan is to depend on your own fingers as much as possible.

I prefer dishes made by sinking plate glass in a wooden frame, and varnishing the wood with shellac varnish; they are less liable to get broken than others, and, if broken, can be replaced more readily than a glass dish can be. Avoid gutta-percha—the best gets brittle.

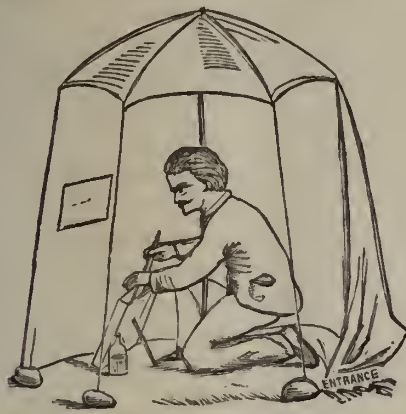
In conclusion, I would suggest that it is better to take out chemicals of every description in sufficient quantities to last at least three or four months, and get a fresh supply sent out to you quarterly. There is always some trouble in getting them shipped, I know, but not so much trouble as there used to be, as the nature of photographic chemicals is a little better understood, and a captain now does not think it safer to carry gunpowder than a bottle of collodion.

Viator.

AN UMBRELLA TENT.

A correspondent of the *Philadelphia Photographer* (Mr. W. H. Kibbe) gives the following description of a simple and useful form of tent:—

"I have seen several varieties of tents for field work described in the *Philadelphia Photographer*, some very good; but here is a description of mine, which, for simplicity, cheapness, and convenience, is all that can be desired. I do not know whether it is new to many, but it may be to some. If you think it worth inserting in your Journal, it may be of use to some that do not feel able to get a more elaborate contrivance.



"Drive a stake in the ground so that it will be about three feet high; now take a common umbrella, tie the handle firmly to the stake, then place a double sheet of black and yellow calico over it, a small hole in the centre for the point of the umbrella to pass through. The entrance may be at either side. The bottom of the cloth reaches the ground, and upon it stones can be laid, or it can be pinned down. A square cut out of the black cloth leaves a yellow square for proper light to enter. The sketch of the arrangement will make all plain."

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ON THE EMPLOYMENT OF CAMERAS WITH WHITE INTERIORS.

BY A. DE CONSTANT.*

For a long time past cameras with white interiors have been employed by photographers, either for the purpose of augmenting the brilliancy of the object, or to impart increased softness to the picture.

A distinguished Parisian Daguerreotypist, M. Belloc, was n the habit of working continually with a white camera, as well as many other artists of celebrity whom I might cite. Although, however, cameras of this kind have been here and there employed, they seem never to have been the subject of much study, inasmuch as it has never been accurately stated wherein lie their advantages, or in what manner the instruments are best used. For we must not forget that the introduction of white reflections into an apparatus termed a *camera obscura* is against all precedent, and is, indeed, by many considered an absurdity.

Mr. Blair's practical and reliable remarks on this subject in the English journals are without doubt of importance, but no precise method of manipulation can be deduced therefrom. It was necessary for me, therefore, when I first took up this question, to institute a very numerous series of experiments to ascertain under what conditions a camera of the description above referred to may be most advantageously employed.

By means of a few strips of white cardboard I covered up by degrees the inner walls of my camera, taking at every stage a picture of the same object, always with exactly the same amount of light. Then, by comparing together the pictures thus secured, I was in a position to judge accurately of the effect which the white interior exerted upon the photographs.

With a perfectly white camera the pictures exhibited too great a degree of softness and but very little relief, the face having the effect of having been almost rubbed out. By leaving the upper or lower wall of the camera black (that is to say, only the sides covered with white card) softness is attained, combined with sharpness and relief, especially in those parts of the photographs towards the black sides of the instrument. When the bottom of the camera was black, the face of the sitter became more brilliantly lighted, while when the top of the instrument was black the garments became clearer.

Now, as it generally happens that the face has more light reflected upon it than the clothes, I found it best to render the sides and top of the instrument white, and to leave the bottom in its original black condition. And in continuing my experiments I discovered that it was better, in fitting up the white screens, to begin from the lens end of the camera, and to line it up half way only towards the focussing glass, so that there remains a margin of black all round the sensitive plate. In this arrangement it appears to me that the light is increased by the white walls, which, however, extending only to the middle of the camera, do not give false reflections, and are not, therefore, injurious to the picture. I do not wish to lay down a theory on the subject, as I am not sufficiently learned in optics to do so, but a practical experience extending over several months has clearly convinced me that the plan I have adopted is based upon good principles; and the portraits I have obtained by this means are all of them of the greatest uniformity, and possessed of extreme delicacy and softness, such, indeed, as are produced by the process of retouching, an operation I have never resorted to.

Another important advantage of this modification is the curtailment of the exposure. The arrangement is, therefore, of especial value when lenses of long focus are used, firstly, because the action of the light is increased, and secondly, because the length of the camera allows of the employment of a white interior of shorter dimensions; the plate is then struck with the white reflections from a distance, and is in no way injured thereby. To obviate direct reflection it is always best to leave the lens end of the camera in a black state.

As I have already remarked, my object is not to theorise, but to describe a practical method which I have successfully employed for some time in my own studio.

For out-door photography and the depiction of landscapes I have but little experience of the white camera. I have employed an instrument of the kind fitted with a rapid lens (of long focus, it is true) on several occasions, and believe that it may be advantageously employed in connection with my instantaneous dry plates. It should be mentioned, however, that out of doors the light is much stronger and more diffused than in the studio, and the white walls of the camera, therefore, yield more glaring and dangerous reflections.

At the same time, if a white of less purity is employed, and in but small quantities only, the arrangement would, I believe, prove of some use in landscape photography. At any rate, the white screens can always be fitted so as to be capable of removal when any very light or strongly reflecting objects, such as water, snow, &c., are to be reproduced.

It is always with the greatest diffidence that I advocate or publish any new process, for one is easily led to mistake one's wishes for the reality. In the present instance experience has shown me that the white camera is really a useful instrument, and I trust that this communication may lead to experiments which will confirm my own results.

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NOTE ON THE PRESERVATION OF DRY TAUPENOT PLATES.

BY M. DAVANNE.*

Some months since, I had the honour to read to the Society a communication from M. Belbeze, in which that gentleman affirmed the possibility of preserving Taupenot dry plates in a sensitive condition for an indefinite period. In support of this assertion, M. Belbeze forwarded to me during the month of October last, for experiment, a series of six plates prepared by him in the September previous, and these plates I unpacked and experimented with in June, exactly nine months after being sensitized. With the exception of a few blisters, due, probably, to imperfect cleaning of the glass, or a damp atmosphere during preparation, the plates behaved exactly in the same manner as if they had been sensitized but a day or two previously, there being no appreciable diminution to be observed in their sensitiveness.

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* *Photographische Archiv.*

* Read before the French Photographic Society.

The mode of preparation was that indicated in the *Bulletin de la Societé Francaise* of November, and consisted in simply covering the plate, after it had been submitted to the second process of sensitizing and thoroughly washed, with an infusion of tea and sugar thus made up:—

Water	500 cents. cub.
Tea	20 grammes
Sugar	25 „
Alcohol, 36° strength ...	25 cents. cub.

A few years ago I also described a process suggested by M. Magny for obtaining similar results, that gentleman recommending the employment of a saturated solution of gallic acid, which was to be poured over the plate after being washed for the last time; prepared in this manner, the film likewise retained its sensitiveness for several months. As I have in my possession some good examples produced by this latter process, I present them to the Society for comparison with those secured by M. Belbeze, as the two methods are very similar in nature. The same results would probably be obtainable with coffee, tannin, pyrogallic acid, and possibly even with a very dilute solution of sulphate of iron, as suggested by M. Blanquart-Evrard, in 1863, the mode of proceeding being simply to prepare the plates with collodion in the ordinary way, and, after thoroughly washing them, to remove all traces of nitrate of silver by means of a reducing agent.

It will be seen in all these processes that the most important point is the elimination, by a suitable agent, of all free nitrate of silver, an operation easily performed by thoroughly washing the plate when but a simple collodion film is present; but, in the case of albumen entering into the combination, the task is one of greater difficulty. In the latter instance, the nitrate forms, with the albumen, an insoluble compound, which is not sufficiently acted upon by water alone, and which, indeed, appears to be the real cause of the rapid alteration of dry plates.

Many observations may be cited in support of this theory. In my own experience, for instance, I have several times remarked that dry collodio albumen plates well washed with distilled water rapidly deteriorate; whereas, others washed with water slightly impure—such as Seine water, or that from the Ourcy canal, or, indeed, all river waters—retained their good qualities. The reason of this is very evident: the latter waters generally contain a minute quantity of soluble chloride; although, of course, not to the extent to which it is contained in waters adjacent to the sea, where the amount is so great as to render it unfit for the purpose. Moreover, further results—which, however, require confirmation—seem to point to the fact that if water sufficiently charged with carbonic acid as to yield bubbles of gas (to be seen attached to a glass vessel after water has been standing for some hours) be used for washing the plates, the films will possess but very little sensitiveness.

Beyond the employment of the reducing agents mentioned above, there are several other methods of getting rid of the nitrate of silver: and, among the first, may be mentioned all those bodies which form, with the nitrate, an insoluble salt by double decomposition—as, for instance, the iodides, bromides, or soluble chlorides. Since the infancy of photography these compounds have been looked upon as fixing agents, and it has been considered, therefore, useless to employ them as a means of preserving the sensitiveness of dry plates. A small proportion of soluble iodide in excess suffices, indeed, to destroy all sensibility, but it is by no means the same with the chlorides and bromides.

The first experiments I made with the chloride of sodium were, probably from the fact that they were badly conducted, unattended with satisfactory results, for the plates treated with this reagent became covered with spots and stains, which a more careful application might have prevented. My former researches, however, on the one hand, and the possibility of employing bromide of potassium to obviate fogging during an alkaline development, led me on to further researches with this reagent, the details of which are scarcely sufficiently matured for publication. I will, however. mention them, so that they may be repeated by others during the summer season.

The plate prepared with collodio-albumen having, as usual, been sensitized a second time, is washed with care, and then immersed in a bath containing one gramme of bromide of potassium for every litre of distilled water. (This amount might doubtless be diminished by one half.) After a lapse of four or five minutes the plate is withdrawn, the surface rinsed with a jet of distilled water, and allowed to dry. After a fortnight of very hot weather, such as we have recently experienced, I have obtained with a plate thus prepared a most brilliant result by ordinary development without the slightest trace of fog or stain, and although time was wanting to prolong the experiment, the general result was such as to lead one to believe that the plate would have kept good for a considerable time longer.

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THE PREPARATION OF COLLODION.

M. Elbert Anderson continues in our Philadelphia contemporary his instructions in the form of photographic dialogues, Mr. Marshall, the novice referred to in a recent article, still being the interlocutor. Mr. Anderson, in the following dialogue, gives his pupil some capital practical information on collodion. He commences:—

Collodion, as you are no doubt aware, is a solution of pyroxyline or papyroxyline (a species of gun-cotton) in a mixture of alcohol and ether. The preparation of pyroxyline presents no very great difficulties, though I do not advise you to prepare your own, simply because you can get it already prepared from the stockhouses much cheaper and better than you can prepare it yourself, lacking the necessary experience and practice.

M. Where do you purchase your chemicals?

A. Humph! a private question which I shall be very happy to answer privately. Suffice it to say that I get my chemicals from ——and——, and, I will add, I have very rarely any cause of complaint with them. "He is a clumsy workman who quarrels with his tools." It were well for you to test your ether and alcohol for acidity or alkalinity; they *should be* neutral, of course. Be careful in the selection of litmus-paper. Most of the stuff sold is so poor in colour as to make it difficult to tell the red from the blue. Procure a deep blue, and cut it up into little strips about two inches long by half an inch broad. Keep it in well-stoppered bottles in a closet. The red you will prepare yourself by simply holding a slip of the blue in the neck of a bottle of glacial acetic acid.

M. What proportion of alcohol and ether must I use?

A. Much will depend upon circumstances; the usual book formula is equal parts of each.

M. What is the effect of an excess in either case?

A. Though pyroxyline does not dissolve in either alcohol or ether alone, yet a mixture of almost any proportion effects its dissolution. When the ether is in excess, it appears to toughen the film, closing the pores, and prevents intensity; whereas, when the alcohol is in excess, it appears to have the contrary effect, making the film porous and soft, being a state favourable to intensity. A still greater excess, however, renders the collodion glutinous and rotten. We gather from this, then, in making a collodion for negatives or for positives whose films it is intended to remove and transfer to other substances, that it is desirable to add rather an excess of ether, the film becoming so tenacious that, when the negative is placed on a tray of water slightly acidulated with nitric acid, the film may be easily removed from the plate and handled like thin India-rubber, without tearing. [In this case, however, be very careful *not* to albuminize your plate.] In hot weather and in warm climates it is desirable, on the contrary, to have the alcohol in excess, as it evaporates more slowly, thus preventing the film from setting too rapidly. Having, then, procured a sample of pyroxyline, weigh out 12 grains, put this in a three-ounce vial, and pour over it 1 ounce of alcohol. When the cotton is thoroughly soaked with the alcohol, pour in 1¼ ounce of ether, and shake until all the cotton is dissolved.

M. Why not have "mixed your liquors" in the first place?

A. Experience proves that the cotton dissolves more readily when previously soaked with alcohol.

M. Excuse my interrupting you so often. I want to know exactly what I am doing, step by step.

A. Whatever you do, don't be afraid to "*ask questions,*" if I may use so ungrammatical an expression. This, then, is plain collodion. Let it stand until it has settled perfectly clear, when it may be filtered through a piece of cotton-wool pressed into the neck of a funnel. Now coat a plate, and pay particular attention to the qualities of the film. 1st. It should set rather quickly. 2nd. It should be quite firm, and *entirely free from glutinosity* at the corner from which it is poured off. 3rd. It should be perfectly smooth and even, like the surface of the glass itself. 4th. It should be perfectly transparent. If it should fail you on the first and second points, the cotton is in fault, and must be rejected. 3rd. The appearance of *ridges,* supposing the plate to have been properly coated, denotes water in the alcohol or in the ether. 4th. If, in addition to the ridges, the film be very glutinous, and exhibit an opaline appearance, the alcohol or the ether contains too much water, and they must be rejected. In this case the excess of water precipitates cotton in a very fine state of subdivision. If, however, none of these faults appear, you may proceed and make up your plain collodion in the necessary quantity, according to the amount of business done. I will allude to this again presently. When I bought my scales I threw away all the weights, and made myself a set of glass ones by cutting out little squares of glass, grinding off the edges, and pasting little pieces of paper on them upon which was marked the number of grains it weighed. I made eight of these, marked as follows: 5, 10, 20, 40, 80, 100, 200, by means of which I can readily weigh off any amount, from 5 grains to 555 grains (not requiring anything smaller than 5 grains). They are always clean, and save much time in picking out scruples, drachms, &c., our system of weights being about the most idiotic conception that I can well imagine.

M. What iodides and bromides do you recommend?

A. The iodides and bromides are chosen according to the desired effects in the collodion. For instance, iodide of ammonium has the effect, in time, of rendering collodion rather more fluid and soft, opening the pores, and thus favouring intensity. After long keeping it liberates the iodine, rendering the collodion red and less sensitive, hastening decomposition. Iodide of cadmium, on the contrary, assumes the opposite results, rendering the collodion glutinous, and toughens the film, closing the pores, reducing intensity, does not liberate iodine, and preserves the collodion colourless, and on this account is not so sensitive as iodide of ammonium.

M. And the bromides?

A. He is a bold man who undertakes to tell you the exact effect of the different bromides. Opinion is greatly divided on this subject. I made a few experiments with a view of deciding to suit my own ideas. You may rapidly repeat them yourself. Collodion No. 1, iodized with 6 grains of iodide of ammonium, brought out the high lights very quickly, which, if not checked in time, would grow very intense, and if checked before this point is reached would leave the shadows devoid of detail. Collodion No. 2, iodized with 6 grains of iodide of cadmium, produced the picture slowly, and with little contrast and no brilliancy. Collodion No. 3, iodized with (or rather bromized with) 6 grains of bromide of cadmium, took a very long time to settle and clear, worked very slow, giving a dull and lumpy image. Collodion No. 4, iodized with 3 grains of iodide of ammonium and 3 grains of iodide of cadmium, made a good surface picture with detail, though lacking depth and rotundity. Collodion No. 5, iodized with 2 grains of iodide of ammonium, 2 grains of iodide of cadmium, and 2 grains of bromide of cadmium, glutinized and destroyed the setting qualities, and left a scum on the surface of the nitrate bath. Collodion No. 6, iodized with 10 grains of iodide of ammonium, 3 grains of bromide of cadmium, 3 grains of bromide of ammonium, to 2 ounces of collodion, made a very satisfactory article—rather too intense to suit me, however. I make mine (Collodion No. 7) iodized, 4 grains of iodide of cadmium, 5 grains of iodide of ammonium, 3 grains of bromide of ammonium, 2 grains of bromide of cadmium, to 2½ ounces of collodion with excess of ether.

M. Is there any rule in regard to the order of preparation?

A. *Rule*—No. Reason—Yes. I generally make up 64 ounces (half gallon) at a time. Into a 64-ounce bottle put 380 grains of pyroxyline, upon which pour 30 ounces of alcohol; when saturated, add 32 ounces of ether, shake until the cotton is dissolved, set aside to clear and settle, and then filter through cotton as before mentioned. Into a glass mortar put 100 grains of iodide of cadmium; grind up with alcohol until entirely dissolved; pour this off in a small bottle. Do the same with 50 grains of bromide of cadmium; pour this into the iodide of cadmium solution. Next take 75 grains of bromide of ammonium, and dissolve in the same manner, using, however, the alcohol in which the cadmium salts were dissolved. This may require about 2 ounces of alcohol; add this to the plain collodion, shaking it well; finally, take 130 grains of iodide of ammonium, and grind it in the mortar with the collodion; when settled perfectly clear and filtered—say in two or three weeks—add to this one-fourth its bulk of the same kind of collodion one month older.

M. What are your reasons for dissolving the iodides and bromides in the order you have just stated?

A. Bromide of ammonium is not readily dissolved in alcohol without the addition of water (which I object to on the grounds already mentioned). But, strange as it may appear to you, bromide of ammonium is easily dissolved in alcohol holding iodide and bromide of cadmium in solution.

M. Why is this so?

A. Iodide of silver, for instance, is insoluble in water, but if cyanide of potassium be previously dissolved in the water the iodide of silver is taken up; possibly some such reaction takes place with the iodide and bromide in the other case.

M. Have you a special formula for copies or for out-door work?

A. Oh, no; I use the same, omitting only the bromide of cadmium, and increasing the iodide of ammonium to an amount equal to the loss of the cadmium (namely, iodide of ammonium 180 grains).

M. I have found some difficulty, in copying engravings or printed matter, in getting the negative sufficiently intense to keep the paper pure white without clogging the lines or the lettering.

A. This is a very simple matter, which, however, belongs more properly to another branch of our "pow-wow-wow." Now, if you like, in our next chat we will take up the subject of the "Negative Bath."

M. With great pleasure; and as that appears to be the great head-centro, upon which so much has been written and said *pro* and *con,* I am really curious to hear what you have got to say on the subject.

A. All right; the nitrate bath is unquestionably the most important of all your preparations, the keystone upon which everything else depends. Well, good night; we will tackle the bath to-morrow evening.

ROBBERY OF PHOTOGRAPHIC MATERIALS.

[We cut the following report from a Brighton paper.]

Gustave Musitano, 36, photographer, was charged with stealing a quantity of photographic prints, chemicals, and other articles, the property of Mr. John Jabez Edwin Mayall, his master, on the 17th January last.

This case was traversed from the last sessions, when prisoner was charged with a fellow servant named Charles Henwood, who was found guilty, judgment being reserved till a point of law had been submitted to the Court above, which had since confirmed the verdict of the jury.

Mr. Willoughby appeared for the prosecution, and Mr. Besley defended the prisoner.

Prisoner was engaged by Mr. Mayall in October last as superintendent of the operating room, at his photographic establishment, King's Road. His salary was two guineas a week, and he slept upon the premises. The various articles named in the indictment, which he was charged with stealing, were ingredients used in the process of photography. Prisoner's duty was merely to take portraits on glass and superintend their "development" upon receiving a cheque from the secretary, and he had nothing to do with printing them. No photograph was allowed to be mounted away from the establishment, and, when they were mounted, those intended for publication were sent to London. Mr. Mayall's suspicions being aroused by finding a considerable diminution of his stock, he placed the matter in the hands of the police, and Superintendent Barnden directed a man named Gray to keep a watch. On Sunday morning, January 16, he stationed himself on the King's Road, from whence he saw two men pass over a part of the roof to the printing stand, though Mr. Mayall never did any work on Sundays. He could not, however, identify them, owing to the height of the building; but Musitano and Henwood only slept on the premises. The next morning Supt. Barnden and Detective Gibbs went to the establishment. Supt. Barnden searched prisoner's bedroom, and in an unlocked drawer found three photographs on card of prisoner. At his request prisoner opened a carpet-bag in the same room, and he found there some negatives and a printing frame not belonging to Mr. Mayall. There were also found there some positives which had been taken from those negatives. It was the alleged using of Mr. Mayall's ingredients in these which constituted the charge. Another negative was found in the printing room, which Mr. Mayall could swear had been taken at his establishment, because of the furniture. In prisoner's possession were also found two portraits of the Prince of Wales (which were private, and not intended for publication), three others of the Princess, and two of servants of the establishment, who ought not to have sat, and which prisoner should not have taken.

Prosecutor was subjected to a very lengthened cross-examination by Mr. Besley, more particularly directed as to the question of stock, but his evidence was not shaken in any material point. He would not swear that his establishment was busily at work on the Sundays after the death of Mr. Peabody and Lord Derby, printing pictures of those personages. If it was, it was against his orders, and this was the first time he had heard of such a thing being done. He would swear that he never gave permission for the "tinter's" portrait to be taken, or that he gave the printer sanction to print twelve copies. He had a son who was gone to Australia, and had taken stock out with him. The stock was supplied from the London house, and did not come from the stock kept at Brighton. He did not examine his son's boxes before he started. The boxes were packed by a man named Gray, in prosecutor's service. About two hundred copies of the private portraits of the Prince of Wales were distributed. He could not say that the two produced were not two of those which had been given away, but he did not think it likely that they were. There was nothing about them by which he could distinguish them. There were about twenty thousand of the portraits of the Princess printed for publication. These negatives were kept under lock and key. He knew that Henwood bought chemicals in London, which were sent to his establishment; but he never knew it till he heard his secretary mention it in this Court, when Henwood and prisoner were taken into custody. Musitano had complained of the chemicals supplied to him; but prisoner had never shown his own portrait as a specimen of negative taken with chemicals which he had himself produced.

Other witnesses having been called,

Mr. Besley replied. He contended that there was no proof that prisoner had disposed of any pictures, and that the system of taking stock pursued by Mr. Mayall was not of that character which could be relied upon in order to show that there was any deficiency. The stock of chemicals and paper might have gone in printing portraits of Mr. Peabody and Lord Derby. The charge, then, dwindled down to that of stealing sixteen photographs: the four mounted portraits and two unmounted portraits of the Prince and Princess of Wales, and ten of prisoner's own portrait. He asked the jury if they would convict prisoner upon the charge of stealing his own portraits, when he openly went to the witness Jones and got her to mount them for him?

The Recorder, in summing up, told the jury if they were satisfied that prisoner printed pictures for his own benefit, and not for the benefit of his master, they would find him guilty.

After a short consultation, the jury returned a verdict of Not Guilty, and prisoner was discharged.

Henwood then surrendered to his bail to receive judgment.

Mr. Willoughby related a few of the facts which were proved at the last sessions. He informed the Recorder that the value of the property which was found in the possession of prisoner was estimated at £150. The learned counsel said he thought it right, however, to state that the jury recommended prisoner to mercy on account of his youth, a recommendation in which Mr. Mayall joined; but he felt it to be his duty, as prisoner had alleged that he took the things by consent of Mr. Mayall, jun., to say that Mr. Mayall had written from Australia denying prisoner's assertions.

The Recorder, in passing sentence, said he should have felt it to be his duty to have ordered twelve months' imprisonment, but for the recommendation to mercy which had been received. The sentence would be six months' hard labour.

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Correspondence.

COL. STUART WORTLEY'S PHOTOGRAPHS.

Dear Sir,—We do not often trespass on your space, but, in justice to ourselves, we feel bound to note the last paragraph of Col. Wortley's letter contained in your impression of this date.

We declined the further publication of Col. Wortley's photographs, finding that the publication account did not work satisfactorily with our ledger account.—Yours obediently,

July 29th, 1870. **Marion & Co.**

RETOUCHING PHOTO-ENGRAVED PLATES.

Dear Sir,—If your patience and that of your readers be not already exhausted, I should like, by a few remarks in reply to Mr. Dallas, to try and remove some "cobwebs of error" which still hang about the subject of "touching."

When the assertion was made that the scraper "can put in no detail," Mr. Dallas, it appears, was "not thinking of pure mezzotinto," but of the mixed style. Why, Mr. Editor, the work done by the scraper is in either style precisely of the same character, and differs only in degree. In pure mezzotint *all* the drawing and detail, with very trifling exception, is produced by the scraper; in the mixed style, very much of the detail and colour is produced in the etching, which bears about the same relation to a finished plate that a sketch bears to a finished picture. If any of your readers will compare an etching proof with a finished impression from the same plate, they will find in the latter a vast amount of detail *put in by the scraper* which they may look for in vain in the etching.

The "tour de force" of putting "colour in the darks," which Mr. Dallas says is possible, and might be practised by some clever "cuss" in the "backwoods," but of which he was "not thinking," curiously enough, appears to be his own invention. If Mr. D. will refer to my letter he will see that I wrote of putting in "small dark detail," a very different thing to putting "colour in the darks."

I have expressed no opinion upon Mr. Dallas's plates, for I have, to my knowledge, never seen them, I hope a successful future may be before them. If Mr. D. can secure, which I do not think very likely, the services of Mr. Cousins (whose name, by the way, should be spelt with an *i*), he may consider himself fortunate.

The object of my former letter was to show that "untouched by the graver" was a term that might be employed to a plate which had in fact been elaborately worked upon, and that Mr. Dallas was in error when he said it meant that "no tool had been used to put in detail or colour," for both could be put in to any extent without using the graver. Mr. Dallas evidently has some knowledge of engravers' tools, but when he made the above assertion, it is quite possible that he was "not thinking" of "rocking tool," "roulette," or "etching needle."—I remain, faithfully yours, **W. T. Hulland.**

Tamworth, August 2nd, 1870.

FLAT BATHS *V.* VERTICAL BATHS.

Dear Sir,—In reply to the question of "W. W." contained in your last number, I have obtained from the Ebonite Co. very large baths with wells for sensitizing plates. Owing to the great saving of bath solution, I have several times endeavoured to use the horizontal baths, but have never been satisfied with them, even for the studio: they entail so much extra trouble. The solution must be returned to the stock bottle and filtered, and the dish well washed every night, whereas I have used a vertical bath, and never poured out the solution for several weeks.

As for out-door photography, let any one go to the plains of India or the deserts of Egypt, and try the merits of the two baths, and he will, I think, require no further proof of which bath is the best for tent work. I use my large well baths now for washing prints.—Believe me, dear sir, yours truly,

Photo.

July 27th, 1870.

Proceedings of Societies.

THE OLDHAM PHOTOGRAPHIC SOCIETY.

The ordinary monthly meeting of the above Society was held on Thursday, July 28th, 1870, at the Mutual Improvement Society's rooms, Henshaw Street, the president, Mr. George Hall, in the chair.

The minutes of the previous meeting were read and passed.

Mr. George W. G. Given was elected secretary in the place of Mr. John R. Heaton, who has left the town. All correspondence for the Society should be addressed to George W. G. Given, Church Lane.

A conversation ensued on the bad effects of washing prints in pipe water before toning.

It was decided that the best thanks of the Society, along with a few prints, be sent to Robert Platt, Esq., of Durnham Hall. Also that the picnic be held at Marple, on Thursday, August 11th.

LIVERPOOL AMATEUR PHOTOGRAPHIC ASSOCIATION.

The seventh monthly meeting of this Association was held at the Free Public Library, William Brown Street, on Tuesday, the 26th ult., the president, Mr. John Henderson, in the chair.

The minutes of the former meeting were read and passed.

In the absence of a paper, a discussion was held on the method of preparation of collodio-bromide of silver.

Mr. W. H. Wilson stated that he used as a tube mortar a palm oil sampling bottle, the pestle being formed of a thick glass tube ground to fit the bottom of the bottle. He commenced by using the full quantity of bromized collodion intended to be converted, the loss from evaporation being inappreciable.

Mr. Gough used the same apparatus, and testified to its efficiency. He had tried Mr. M. Carey Lea's method of boiling the silver in alcohol and adding it to the collodion—a plan he found to answer every requirement.

Mr. O. R. Green said it had occurred to him, some time since, that if a bottle partly filled with hot alcohol containing nitrate of silver in solution was plunged into cold water, especially if kept in motion while cooling, the reduction in the temperature would cause the silver to be precipitated in an extremely fine powder, which might be available to mix with the collodion. He added that a similar plan was adopted in the preparation of some compounds of phosphorus.

The general opinion of the members seemed to be that the use of a mortar was desirable. Reference having been made to the keeping qualities of collodio-bromide plates,

Mr. Wilson said he had exposed plates which had been kept three years with excellent results.

Mr. Gough exhibited several negatives taken by various modifications of the collodio-bromide process. Two were prepared by Mr. Lea's last new process, silver being largely in excess, restrained by *aqua regia*. He had exposed them half as long again as would be required for a wet plate. The negatives appeared to want detail in the shadows, and apparently were under-exposed. They were his first attempts at the process. The third plate was prepared by the ordinary process, except that a large excess of silver was present. The result was unsatisfactory, being weak and inclined to fog. The fourth and fifth plates were prepared with collodio-bromide containing a slight excess of silver. The results were very good. The sixth contained free bromide. The result was rather hard, with an absence of detail in the shade. In the preparation of the seventh plate a few drops of liquor ammonia were added to the collodio-bromide.

One of the members thought the resulting picture slightly hard.

Mr. Wilson, however, considered the negative bore testimony to the value of the addition.

In answer to Mr. Phipps,

Mr. Gough said he had tested the collodio-bromide before use, to assure himself of the presence of the excess of silver in one case and that of bromide in the other.

The President called attention to the recent recommendation of the additions of plain collodion to prevent mottling.

Mr. Wilson said that he found the addition of alcohol a certain cure for mottling, and ether for tearing of the film.

The subject of presentation prints was brought before the members, and the Secretary was instructed to communicate with the leading photographers.

The President alluded to the late excursion up the Weaver, and Mr. Wilson testified to the zeal displayed by Mr. Higgin in providing for the comfort of the members and their friends (twenty-six in all) who were present on the occasion. He moved a vote of thanks to Mr. Higgin for his liberality in granting the use of a steamer.

Mr. Roberts seconded the motion, which was carried.

Mr. Gough asked if any member could account for the peculiar red or pink colour of some collodio-bromide negatives. He thought the addition of gallic acid to the tannin bath favoured the production of the colour. The negatives printed weak.

Mr. Phipps observed that he had at one time used a preservative bath of ten grains of gallic acid to one ounce of alcohol and water, afterwards washed off, and did not find the plates prone to the defect complained of. He suggested a slight intensification with silver and pyro.

The President also recommended this course, and considered the colour in question arose from over-exposure or excess of pyro in the developer. He explained the method adopted by himself of iodizing the plate prior to the use of the silver.

Mr. Atkin exhibited some transparencies which were slightly marred by crapy lines. The defect was in the collodion. He had prepared it himself, and, being good in other respects, and having a quantity of it, he desired to be informed of a remedy.

Mr. Green thought the defect arose from an excess of water, and advised the addition of a small quantity of carbonate of potash—a method formerly used in the Taupenot process to ensure a rotten film.

Mr. Mawdsley said the safest plan was to add to the collodion a further quantity made with more highly-rectified solvents.

Mr. Green remarked that the specific gravities of the solvents should invariably be ascertained by actual experiment.

A Member having reminded Mr. Atkin of the suggestion of the use of gelatine for the purpose,

Mr. Wilson said gelatine did not answer. He had found by experiment that alcohol had a greater affinity for water than gelatine.

The President had lately been troubled with marbling stains on his wet plates, and asked the opinion of the members as to the cause.

It was the general opinion that the solvents in the collodion were to blame, supposing the bath free from impurities.

Mr. Gough attributed it to the gum contained in the cheaper kinds of methylated alcohol. He stated that its presence could be ascertained by mixing the alcohol with water, the gum, if present, rendering the mixture turbid.

Mr. Roberts exhibited some carbon prints by single transfer obtained on ready sensitized paper; and also several stereo views on Durand's sensitive paper. He stated that no extraordinary precautions had been taken to preserve it. All the prints showed great excellence.

The meeting was then adjourned.

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Talk in the Studio.

Destroying a Photographer's Statue.—The *Times'* report of the assizes at Lewes states that Thomas White, a respectable looking young labourer, was indicted for maliciously injuring a marble statue at Hastings. The prosecutor, a photographer at Hastings, had a marble statue at his door, worth £30. The prisoner and another man, named Bray, were passing it one night, and one or both of them threw it down and broke it. Bray was called as a witness for the prosecution, and swore that the prisoner did it; but there was no witness to confirm him, except one, who contradicted himself; and the prisoner protested that it was Bray himself who did it. There was no doubt it was done idly, whoever did it, and it seemed that the men were in drink. The jury found the prisoner guilty, but recommended him to mercy on the ground that they believed the other man had to do with the act. The prosecutor also came forward and recommended the prisoner to mercy on the ground that he also believed the other man was really guilty, and that the prisoner had no malicious intention and was in drink at the time. The Lord Cheif Justice said, in consequence of these recommendations, he should inflict a very lenient sentence, and sentenced the prisoner to a fortnight's imprisonment, in addition to a fortnight be had already endured.

Ormsbee's New Washing Method.—Messrs. Anthony, of New York, describe a method of washing prints for which they supply the necessary aids. These are, first, a pair of rubbe rollers 12 inches long and 1¼ inches in diameter, and a piece of solid sheet rubber, on which the prints are placed for washing. The rubber is then put in a tank or dish, and folded over the prints. The rubber rollers are then drawn backwards and forwards over it, in the tank or dish, which may contain 1 or 2 gallons of water, for two or three minutes, when the water may be poured off and renewed as often as may be thought necessary. A portion of this water may now be put in a smal vial and tested as follows. Take a little of the water in a vial, and drop into it two or three drops of a solution of starch; mix thoroughly together, and then add one or two drops of a solution of iodine. If the hyposulphite has been entirely removed, the mixture, upon being shaken, will remain of a strong blue colour; if, however, a trace of hyposulphite remains, the blue colour will not be retained. By this method, they state, prints can be washed in a few minutes better than then they could be by lying all night in water, which has a tendency to dissolve the albumen and to lower the tone of the whites.

Mr. Edwards' Photo-Collographic Process.—We have received from Messrs. Edwards and Kidd some examples of the Photo-collographic Process patented by Mr. Edwards, and recently described in our pages. The majority are reproductions from drawings, but some are from negatives from nature and these we like best. The whole series shows progress and gives promise. We shall have more to say on the subject shortly.

The Woodbury Photo-Relief Process.—We understand that the new company for working this process are now in actual commercial working, with every prospect of success. Some of the work upon which they are engaged consists in reproductions, in small size, about seven by five inches, of popular copyright engravings, such as Hook's "Luff Boy,' Goodall's "Mater Purissima" and "Mater Doloroso," and several others of the same stamp. The examples we have seen are exceedingly perfect, surpassing, in many respects, the bulk of the work hitherto done.

To Correspondents.

W. G. (Stradbroke).—The silver in old nitrate baths and washing waters is best thrown down as a chloride by means of hydrochloric acid, or a mixture of hydrochloric acid and common salt. The chloride of silver may be either sold to a refiner, or reduced by him at a specific charge. The silver in fixing solutions should be precipitated with liver of sulphur, and the developing solutions may be added to the hypo, and the silver recovered in the same way. Liver of sulphur and sulphide of potassium—or, rather, polysulphide of potassium—are the same thing. It is impossible to give quantities, because the proportion of silver present in any of the waste solution is unknown. To test if sufficient has been added, take a little of the solution in a test-tube and add hydrochloric acid or liver of sulphur as the case may be, and see if any further precipitate is caused. You will find the address of refiners who will undertake to reduce your chloride and sulphide of silver in the Photographic News.

Pen.—If direct sunlight enters your studio, the use of blinds is your only resource. If you describe the shape and position of your studio, we will give you such advice as we can as to the best blinds to use.

C. W.—The plate must be cleaned, so that water flows evenly over its surface, with water and hydrochloric acid, as instructed, before the Tunicare solution is applied. If the water does not flow evenly over the plate freely without running into lines, the dilute Tunicare will not do so; but if the water flew in an even wave, the Tunicare solution will also. If it fail to do so on the first application, let it flow off into a clean glass, and pour back on to the plate; it will flow evenly, in such case, after once or twice pouring off and on.

Photo.—We have seen several prints from negatives from nature by the process to which you refer: some of them are architectural subjects, and some "bits" of landscapes or close scenes. We presume that you can obtain specimens by applying to the patentees.

Sixth Volume.—We do not know whether Gustave Doré's Bible illustrations have been photographed or not, but they cannot be photographed without infringing the copyright, unless by permission of the publishers. Messrs. Cassell, Petter, and Galpin are the publishers of the English edition. 2. Yes; it is better to throw down the silver in washing waters with hydrochloric (muriatic) acid, because excess of chloride of sodium (common salt) will redissolve a portion of the chloride of silver. 3. We prefer kaolin to animal charcoal for decolourizing a printing bath, but we use neither, as a little chloride of sodium or citric acid answers so much better than either.

H. S.—Our experience with Tunicare is, of course, only experimental, but it should not, when dry, give any irregular or iridescent appearance to the surface of the glass. Have you diluted it as instructed? Does the iridescent appearance in question interfere with the production of a perfect negative? The fact that the water recedes from the edge of the plate, and that the Tunicare does not flow evenly over that portion, shows that the glass has not been sufficiently cleansed first with hydrochloric acid and water as instructed. If any greasy matter remain on the plate sufficient to repel water, it will also repel the Tunicare, and, in that case, an irregular surface will certainly result.

Belgian Subscriber.—Ormsbee's method of washing, referred to by Mr. H. T. Anthony, consists in a method of applying pressure as well as water in order to expel all traces of hyposulphite from the print. The pressure is effected by means of an india-rubber roller, supplied by Mr. Anthony's firm, but not kept, so far as we know, by any photographic dealer in this country. We give a detailed description of the method in question in another column.

J. H. Halvey.—The details of the "Lichtdruck" process are kept secret, the article to which you refer being manifestly intentionally vague, if not misleading. The fullest information on the subject which has been published is that which we have given from time to time in relation to Herr Albert's process, the best of the processes of that kind of which any details are known.

J. Dodge.—The cards enclosed are very good, being soft, delicate, and well modelled.

M. Gilbert.—If we hear of anything we will let you know.

Hypo.—We are somewhat puzzled as to the meaning of your question relative to the addition of "milk of sulphur" to a fixing solution. Is it *liver* of sulphur you mean? If so, the time for pouring off the supernatant fluid is when the precipitate has quite subsided. 2. It is impossible to give proportions, since the hyposulphite solution contains an uncertain quantity of silver. The exercise of a little judgment will easily assist you to determine. Take an ounce or two of the fixing solution, and add a drop at a time of the liver of sulphur in strong solution. Let the solution contain a drachm of the liver of sulphur in an ounce of water, and continue dropping slowly so long as any turbidity is produced. When the whole looks turbid, let it stand until the precipitate subsides, and then proceed as before. By this plan an estimate may be formed of the proportion required for the bulk. Liver of sulphur will precipitate twice its weight of nitrate of silver. 3. It is better to place the old fixing baths from time to time in a vessel for the purpose, and only precipitate when a sufficient accumulation has been acquired. It should then, if possible, be done in the open air, as the stench is unpleasant and injurious in a studio. We do not remember the publishers of the photographs of the Palestine Exploration Expedition.

F. D. Brigham.—Thanks. Both your cards and cabinets are good, and possess many very excellent qualities. They are at once delicate, brilliant, and well modelled, and, in most instances, show fine taste. The pictorial backgrounds are very effective. By what method are they produced?

R. M. F.—The use of sulphocyanide of ammonium or potassium as a fixing agent never became very general, and has, we believe, passed quite out of use. The value of a new fixing agent could only be ascertained by extended experience, and it was found, after lapse of time, that perfect fixation was not easily secured. As an aid in making a toning solution a sulphocyanide is useful, the bath of sulphocyanide of gold having some especial good qualities of its own.

Several Correspondents in our next.

Advertisements and communications for the Publishers should be addressed to 15, Gough Square, Fleet Street, E.C.

Photographs Registered.

Mr. A. Crowe, Stirling,
Two Photographs of Flagstaff on Field of Bannockburn.

Mr. Berlon, Bradford,
Photograph of Rev. A. G. Russell.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 623.—*August* 12, 1870.

CONTENTS.

	PAGE
On the Production of Ceramic Photographs	373
Washed Sensitive Paper	374
American Copyright in Photographs	374
Enlargements *v.* Direct Prints	375
Iodized Albumen as a Preliminary Coating	375
Tom Hood on Photography	376
Washed and Fumed Paper.—Chloride of Gold and Potassium. By Colonel Stuart Wortley	376
A Chat about Posing and Sitters	376
A Meteorological Study. By W. T. Bovey	377
Direct Carbon Printing. By William Blair	378
The So-called American Wet Albumen Process. By James Grasshoff	379
Photographic Rambles in South Wales. By Thomas Gulliver	379
Practical Method of Revonating an Old Silver Bath. By Prof. J. Towler, M.D.	380
M. Krone on Albert-type	381
A New Method of Intensifying. By K. Schwier	382
A Hint to Photographers. By H. T. Anthony	382
Portraiture as Commerce	382
Be Sure to Remove the Hypo	383
Correspondence.—Tunicare —Col. Stuart Wortley's Photographs	383
Talk in the Studio	383
To Correspondents	384
Photographs Registered	384

ON THE PRODUCTION OF CERAMIC PHOTOGRAPHS.

CHAPTER II.—GRUNE'S METHOD.

VE shall now proceed to describe the method of enamel-ing employed by Herr Grune, the patent of which in this ountry, as we have before stated, has been permitted to apse. The operations, as we have seen them performed y him, are simple and certain, and produce very fine esults.

The first step is to produce a good transparency on wet ollodion in the camera. To obtain the best results a good egative is indispensable; but the negative does not equire any especial qualities different from those which ield good results in ordinary printing operations. A vell-modelled negative, with fine detail and an average mount of intensity, will yield good results. From this a ransparent positive is produced in the camera. The only pecial material required in this part of the process is the ollodion. It must be of good body. Herr Grune employs, n preparing it, three per cent. of soluble cotton. A good ommercial bromo-iodized collodion, in which from six to ight grains additional of soluble cotton per ounce has een dissolved, will answer well. It is desirable that this oluble cotton should be of a kind giving a somewhat tough lm, to facilitate subsequent transferring operations. iesegang's papyroxyline is well suited to the purpose. 'he ordinary nitrate bath in good condition for its usual urposes is employed, and a somewhat full exposure in the amera is given. An ordinary iron developer is employed n such a condition that it develops somewhat slowly, and ives a vigorous image. The proportions generally nployed by Herr Grune, subject to modifications if it eveloped too quickly, are—

Protosulphate of iron	15 grains
Glacial acetic acid	20 minims
Alcohol	20 ,,
Water	1 ounce

he solution is better a little old. It is important that it evelop somewhat slowly, and give a vigorous image, with ne gradation and clear shadows. As a rule, the image intensified with pyrogallic acid and silver. The amount f vigour and deposit obtained at this stage is to a large xtent the measure of the force and brilliancy of the nished enamel. The picture may be fixed in either yanide or hyposulphite of soda.

After fixing, the plate should be placed in water and left soak. Herr Grune prefers the film to soak for several ours, but it may be used within half an hour. It is next laced for a few minutes in a dish of sulphuric acid and ater, one part of the former in twenty-five of the latter. his bath has a double object: it loosens the film and akes it readily leave the glass, and it at the same time renders it tough, and so facilitates the subsequent manipulations with the loose film. After remaining a few minutes in the sulphuric acid and water the film becomes quite loosened from the glass, and is placed in a dish of clean water to rinse from the acid. As a rule, the film has become so loose that it is only necessary to lift the glass from under it and leave it floating in the water. To aid in removing it, however, and in subsequent manipulations, a common camel's hair pencil, about the thickness of a goose quill, is used. The hair point of this pencil placed at the corner of the film, by a dexterous twist is made to wrap a portion of the film round it, and so enable the film to be readily moved about in its detached state. After rinsing in one or two changes of water, the image is ready for toning, which is more easily and perfectly effected in this detached state than when it is attached firmly to the glass.

In all Herr Grune's transformations of the silver image, the first stage is to convert it into platinum. This is effected by toning it in a bath of bichloride of platinum, which is used very dilute, and, formulated, may stand thus:—

Bichloride of platinum	1 grain
Water	10 to 15 ounces

This solution must be first neutralized with carbonate of soda, and then acidulated very slightly with nitric acid. The mode of preparing it recommended by Herr Grune is as follows:—Make a solution of bichloride of platinum, containing eight grains in an ounce of water; neutralize this with carbonate of soda, and then add nitric acid until it is very faintly acid, sufficiently so to redden blue litmus paper. This should be kept as a stock solution, and diluted for use as it may be required. Bichloride of platinum is a salt of an orange brown tint, very deliquescent, and should, therefore, be kept in a closely-stoppered bottle—or, better still, in a solution. When the dry salt has been purchased, it is well to make it into a concentrated solution of known strength, as, from its deliquescent nature, it is difficult to weigh with accuracy small portions of the salt as supplied in commerce. It generally contains considerable excess of hydrochloric acid, and, if used without neutralizing, and in strong solution, it is apt to convert the image of reduced silver into one of chloride of silver without any deposit of platinum taking place. It is a somewhat caustic and corrosive salt, and care should be used in handling it.

To tone the image, the washed film is placed in the dilute solution of bichloride of platinum, where it blackens with tolerable rapidity. If the image be an intense one it gradually acquires a very deep, rich, neutral black from the deposit of metallic platinum in a fine state of subdivision. The chlorine liberated by the precipitate of the metallic platinum attacks the silver in the image, and converts it into chlorido of silver; and, so long as there is any silver left to be thus converted, the deposit of metallic platinum will be continued. The presence of the white chloride of silver may be detected by the slightly grey tinge it communicates to the blackness of the platinum. When the toning is completed—which may be ascertained by the perfectly black appearance of the image continuing without change—the film is removed, by the aid of the camel's-hair pencil, from the platinum solution, and placed for a minute in a dilute bath of hyposulphite of soda, which dissolves the chloride of silver, leaving a black image formed of metallic platinum in a very fine state of subdivision.

The image in this state is very beautiful. The grey tint caused by the chloride of silver has disappeared in the hyposulphite solution, and the tint is a fine, intense, velvety, neutral black. If transferred to paper in this stage, it gives a permanent photograph very closely resembling an engraving. If transferred to wood by the method we have before described, it answers the purpose of the wood engraver admirably. If transferred to an enamel tablet, and fired in the muffle, it yields a fine enamel photograph of a black tint, inclining, however, to a neutral grey. If a purple black, a brown, or a purple-brown be desired, the deposit of platinum must be supplemented by the precipitate of some other metal which, in burning, shall produce the necessary modification of tint. Of the modes of effecting such modification we shall treat in our next.

WASHED SENSITIVE PAPER.

The possibility of using, in hot weather, albuminized paper which has been sensitized from one to two weeks, not only without loss of any kind, but with positive advantage, in some respects being so important, we shall make no apology for bringing under the attention of our readers every fact which comes before us bearing on the value of the method of washing and fuming sensitive paper. There has been already some discrepancy in the results produced by different experimentalists, but the mass of the evidence which reaches us is, without qualification, in favour of the washed paper. In last week's "Echoes" the *Old Photographer* refers to the accepted theory of silver printing and its relation to the process, pointing out the importance of avoiding a washing so thorough as to remove all free nitrate from the paper, as upon the presence of some free nitrate of silver, to be converted into a fresh supply of chloride by the chlorine liberated by the first action of light, much of vigour depends.

This theory appears to be perfectly consistent with the facts of the case, and Col. Stuart Wortley, in a communication on another page, endorses it, pointing out at the same time that much must depend upon the proportion of chloride employed in the albuminizing of the paper. We have just received a communication from an experienced and accomplished amateur, which strongly illustrates the latter point. The communication in question is accompanied by a selection of fine vigorous prints produced on washed paper. The washing in this case, we are informed, was of the most thorough character, four different waters being employed. The two first washing waters were found to be rich in silver, the third contained such a minute trace as not to be worth keeping, and the fourth showed no turbidity whatever when tested by common salt. The paper was kept ten days before the prints we have received were produced thereon.

As these prints are admirably vigorous, it becomes perfectly clear that the presence of free nitrate is in no wise necessary to the production of rich prints. But as the purpose of free nitrate is merely, by the aid of liberated chlorine, to supply fresh chloride, it is tolerably clear that if the initial supply of chloride of silver be sufficiently plentiful, the same end will be attained without the aid of free nitrate. Experiments with collodio-chloride of silver are suggestive here. If a sample of collodio-chloride of silver contain very little chloride in suspension, it is difficult without a good supply of free nitrate, to secure vigour but if a good body of chloride of silver be held in suspension, and a little citrate of silver be present, fine vigorous images can be obtained without the presence of free nitrate at all in the collodio-chloride emulsion. A somewhat highly salted albuminized paper supplies the same conditions after exciting and washing, the albumen furnishing the organic element instead of citric acid. In the paper, fuming is, however, an indispensable condition of sensitiveness and vigour, whilst in the collodio-chloride it is, although a valuable aid to sensitiveness and vigour, not indispensable in the attainment of success. Where weakly salted papers are used, it is probable that some trace of free nitrate should remain; whilst a highly salted paper will afford a sufficiently rich layer of the chloride to permit perfect washing without detriment to vigour.

AMERICAN COPYRIGHT IN PHOTOGRAPHS.

Until recently the photographers in the United States have had no protection from piratical copyists of their work. We learn from our esteemed friend, E. L. Wilson, Editor of the *Philadelphia Photographer*, that through the exertions of the National Photographic Association, who had appointed a committee to undertake the matter, an excellent copyright law has just been secured. It appears to be simple, free from ambiguity, and reasonable in its provisions. In many respects it forms a contrast to the English Copyright Law referring to photographs, and might furnish some valuable hints to those interested in obtaining an amendment of the law now in existence.

At the outset it will be seen that the author of a photograph is declared to be the owner of the copyright, and has the sole right to print, reproduce, or issue it in any way, thus putting an end to all questions as to ownership of the negative, or the right to copy portraits. The photographer being thus guaranteed in a copyright in his work, the public will be protected safely enough from the misuse of this power, by the commercial considerations of self-interest of the photographer, who must live by public patronage, and would quickly lose his connection if he made any misuse of the portraits of his customers.

Another important element of consideration for the convenience of the photographer is shown in the Act. In registering a photograph at Stationer's Hall, personal attendance is necessary, the authorities at the Hall declining to receive communications by post, so that the photographer, no matter where resident, must attend by himself, or agent. Our publisher has endeavoured to meet the difficulty by undertaking the necessary duty for provincial photographers. But without some such private method of overcoming the inconveniences caused by official obstructiveness, the plan of registration must effectually have made the copyright law a dead letter to the mass of provincial photographers. By the new American law it is simply necessary to post a statement of the title and two copies of the photograph to the Library of Congress to secure the copyright of the picture.

Another point worthy of notice is the necessity, after securing a copyright, of specifying on the face of the mount, "Entered according to the Act," &c., and the imposition of a penalty of a hundred dollars for appending such notice to a photograph which has not been duly entered. We subjoin such extracts from the new Act as seem to us desirable to have placed on record :—

> Any citizen of the United States, or resident therein, who shall be the author, inventor, designer, or proprietor of any photograph, or negative thereof, and his executors, administrators, or assigns, shall, upon complying with the provisions of this Act, have the sole liberty of printing, reprinting, publishing, completing, copying, executing, finishing, and vending the same.

Copyrights shall be granted for the term of twenty-eight years from the time of recording the title thereof, and they may also be extended and assigned the same as patents.

No photographer shall be entitled to a copyright unless he shall, before publication, deposit in the mail a printed copy of the title of the photograph for which he desires a copyright, addressed to the librarian of Congress, and within ten days from the publication thereof deposit in the mail two copies of such copyright photograph, to be addressed to said librarian of Congress, as hereinafter to be provided.

The titles aforesaid are recorded in due form in a book by the said librarian of Congress, and he shall give a copy of the title under the seal of his office to said proprietor whenever he shall require it.

For recording the title of any photograph, the librarian of Congress shall receive from the person claiming the same, fifty cents, and for every copy under seal actually given to such person or his assigns, fifty cents.

The proprietor of every copyright photograph, or negative, shall mail to the librarian of Congress, at Washington, within ten days after its publication, two complete copies or prints thereof of the best edition issued, and a copy of any subsequent edition where any substantial changes shall be made.

In default of such deposit in the post-office, said proprietor shall be liable to a penalty of $25, to be collected by the librarian of Congress.

Any such copyright photograph may be sent to the librarian of Congress by mail, free of postage, provided the words "Copyright Matter" are written or printed on the outside of the package containing the same.

The postmaster to whom any such copyright photograph is delivered shall, if requested, give a receipt therefor, and when so delivered, he shall mail it to its destination, without cost to the proprietor.

No person shall maintain an action for infringement of his copyright, unless he shall give notice thereof by inscribing upon some portion of the face or front thereof, or on the face of the substance on which the same shall be mounted, the following words, viz.:—

"Entered according to Act of Congress, in the year ——, by A. B., in the office of the librarian of Congress, at Washington."

Any person impressing such notice upon any photograph for which he has not obtained a copyright, for so offending shall forfeit and pay $100.

Any person infringing a photograph copyright shall forfeit all copies to the proprietor, and also suffer suit for damages by said proprietor in any court of competent jurisdiction.

The above gives all the important points of the law, except in cases of assignment or suit, and gives the photographer all the protection he could ask, as well as a very easy and cheap way of securing it.

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ENLARGEMENTS *V.* DIRECT PRINTS.

[Referring to the solar camera enlargements contributed to the recent American Exhibition at Cleveland, our Philadelphia contemporary says :—" The Exhibition established one fact, namely, that in the branch of photography pertaining to solar enlargements, America is far ahead of Europe. The examples sent from abroad were very far inferior to those exhibited by our own photographers. Dr. Vogel specially noticed this, and pronounced those by Mr. Albert Moore, of this city, to be 'by far the finest enlargements he ever saw, and very superior to anything at the Paris Exposition.' A few years ago we held that no solar camera print could be as good as one from a contact negative. Those who saw Mr. Moore's prints at Cleveland will agree with us, that it would not be safe to make such an assertion now."

As a general statement of a fact, it continues undoubtedly true in this country that solar camera prints—or, indeed, enlargements by any method—cannot compare with good prints by direct sun printing; but we have seen exceptions. Some of Mr. Mayall's solar enlargements on albuminized paper printed out, not developed, leave nothing to be desired. We have in our possession one of his enlargements amplified about ten diameters, which is quite untouched, and certainly equal to the majority of prints of the same size taken direct. Mr. Stuart, of Glasgow, some years ago, exhibited some enlargements on albuminized paper printed out in the solar camera, which were quite equal to contact prints. But taking the average of the enlargements produced on paper, they are far inferior to direct prints. Enlargements on collodion, either transferred to paper by methods we have recently described, or left on the glass, are, as a rule, by far the most perfect enlargements we see. In delicacy, definition, and modelling, they lack nothing, although something is at times wanting in force and colour. When the branch of the art has been more universally worked it is probable that all difficulties will be overcome.

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IODIZED ALBUMEN AS A PRELIMINARY COATING.

Mr. H. Esse recommends in the *Mitthielungen* the use of a dilute solution of iodized albumen as a preliminary coating for collodion plates. The method is thus described :—

Take the white of a fresh egg, and beat it with an equal proportion of distilled water, and the addition of four or five drops of ammonia, until it is a white froth, and leave the albumen thus prepared to settle during from twelve to eighteen hours, the cup being, of course, covered. The clear albumen should be kept in a bottle. Take of—

Distilled water	25 ounces
Albumen	1½ ,,
Iodide of ammonium	1½ drachm

Shake well, and filter the whole, taking care that no air-bubbles remain.

The plates are cleaned with acid, and then well washed in clean water, which must be allowed to flow evenly over them.

Now leave it to drip, and, when it is nearly dry, pour the above thin, filtered albumen, like collodion, thereupon, so that, if possible, the whole of the upper side of the plate will be covered with it. Let the fluid that runs off be passed again through the filter, so that the albumen may continue to be perfectly clean and clear. The plates must now be placed in a drying stand, and may be fit for use in half an hour if kept in an even, warm temperature; but in cold weather they are longer in drying.

Plates prepared in this way may be preserved in a plate-box for eight days with perfect safety, and at the end of that time will give as good results as if just prepared. They must be free from all dust when the collodion is poured over them.

The silver bath is scarcely ever tainted by this method of preparing the plate. The collodion never becomes detached from the glass throughout the manipulations of the negative process, as is usually the case with old plates. Fogged plates (the fogging generally occurs with unclean and spoiled collodion, it is believed) are never occasioned in this process, the advantages of which are sufficiently apparent to recommend its adoption. I have used it since April of the present year, and to my entire satisfaction.

The filter is frequently renewed, and the thin solution is made fresh every week. It is attended with very little trouble—only the preparation weekly of albumen from one or two eggs. This is certainly advisable in hot summer weather.

Should fogging or spots of any kind make their appearance with a good working collodion; it is a proof that the albumen is spoiled, and when fresh albumen is obtained all faults will disappear.

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TOM HOOD ON PHOTOGRAPHY.

The gifted mind of the elder Hood, taking a lively interest in everything around it, was not likely to allow such a discovery as that of photography to pass unregarded. And it is interesting, in perusing the "Memorials" written by his son and daughter, to remark how he again and again refers to it, in the course of his correspondence, as to something which had excited his wonder and made a deep impression on him. Thus, for example, in a letter to a German friend, written in March, 1839, within a month or two of Fox Talbot's first paper on photography at the Royal Society, he says, in his odd, quaint way, inserting a postscript for the purpose:—

"Have you read the account of photogenic drawing or lithography? Moore saw 'History *write* with a pencil of light,' but now light itself *draws* without any pencil at all. 'Tis a mercy light does not write, but perhaps even that will be done hereafter, and Phœbus will not only be a patron of poets, but a poet himself, and deal, like me, in light literature." Jane [his wife], who has some maternal vanity, when she heard of the sun drawing pictures, said, 'So does *my* son!'"

In a letter to Mr. Franck, dated April, 1841, before the art had fairly taken position in portraiture, he says:—

"Have you yet heard, in your remote, out-of-the-way place, of the Dagerreotype? How I wish, by some such process, I could get a picture of us all—the family group, just as we are—to send you; then you would have me quite as ill-looking as my portrait, and dressed, for warmth, in a pea-jacket and blue trousers (my Ostend home costume); Jane [his wife] as usual, but looking rather less puzzled than when she had to contend with foreign money and German cookery. Don't you perceive it? Fanny tall and fair; Tom tall and dark, a good deal like a squirrel without a tail."

Literature scarcely offers a suggestion of a group more interesting than this would have been had the photography of that time been equal to its realization; and, unfortunately, it is now lost for ever. Other allusions to photography occur in letters to friends, as well as in published articles, seeming to show the interest the great humourist took in a science then in its infancy. He once said of himself, "I like to see scientific theories justified by practice;" and there can be little doubt that with his appreciation of science and his genuine love of art combined, he would have rejoiced beyond measure at the results now attending the practice of photography, which were utterly undreamed of in his day.

WASHED AND FUMED PAPER.—CHLORIDE OF GOLD AND POTASSIUM.

BY COLONEL STUART WORTLEY.

I think the "Old Photographer" is correct in attributing the failures he has seen in the washing and fuming process to over-washing. The object of the washing is merely to get rid of the free nitrate on the surface to a certain degree, and that degree is best attained by simple rinsings in one or two waters. By rinsings I mean that the sheet is never to leave the fingers, but, when drawn up from the bath, to be passed rapidly through the washing-water and hung up at once. It is possible some samples of paper too weak in chloride may be used. A strongly-salted paper is certainly desirable, and the weak, mealy-printing French papers should be avoided.

The double salt of gold should be made as follows:—

Dissolve 50 grains of gold in *aqua regia* composed of 7½ drachms muriatic acid and 1½ drachms nitric acid; when dissolved, add 18 grains carbonate of potash; filter; and crystallize over a spirit-lamp slowly. Watch carefully towards the end, and stir constantly till quite dry and the acid is driven off. Dissolve the crystal in water 1 grain to 1 drachm.

To make the bath, take a small lump of chalk (say 20 grains) and put in 20 ounces of water; add a little of the gold solution, shaking up well; use three hours after mixing. In cold weather allow four hours, in very hot weather two and a-half. Filter off into the toning dish, retaining the chalk in the bottle; after toning return the bath to the bottle, and put in the light to favour the precipitation of any silver that may have gone in with the prints; add (daily) gold to the bath, according to the number of prints for toning, at the rate of 1 grain to four sheets. After a week or ten days' use the chalk will get black; then change it, and throw into the residue from the old chalk.

This double chloride of gold and potassium was first, I believe, proposed for toning by M. Davanne, but I do not think the exact formula for making the salt was published. I have worked it out with great care, and have to acknowledge, with thanks, some useful hints on the subject from the members of the firm of Hopkin and Williams, of New Cavendish Street.

This gold salt works perfectly with any toning process, but I find the one I describe as good as any.

A CHAT ABOUT POSING AND SITTERS.

Mr. Roland Vanweike, who contributes a series of papers entitled "Under the Skylight," in our Philadelphia contemporary, in his last paper discourses on posing, to an articled pupil. We extract some of the remarks of the teacher, omitting the questions of his interlocutor, for brevity. He commences by impressing on his pupil the infinite variety of position possible to the sitter.

"If you wish to know how many different positions the human form is susceptible of, count the number of changes that may be rung on the musical scale, the ten numerals, or the letters of the alphabet.

"The field before us is infinite in its variety, and we should never be satisfied with simply repeating what we have done before, or copying somebody else, but strive every time to make something different. Scarcely any two subjects will admit of the same arrangement; each must be studied separately in the few moments they are before us, and the posing made that is best adapted to the individual. Very often a sitter comes in with a picture of a friend, and wants one made like it. The photographer does his best to get as near it as possible, but such sittings are nearly always failures. Better drop the sample, and pay no attention to it, but make what is best adapted to the subject before you.

"Now here is a gentleman that wants a three-quarter figure, sitting. He has the appearance of a farmer, and to place him among such surroundings as we would give a professional would be entirely out of place, so we will seat him in this easy chair, and let him make himself as much at home as possible. If he will cross his legs, so much the better; it is really the best for such a position, as it breaks up the parallel lines we otherwise get. Turn the body about three-quarter view, with the face a little more to the front, and place a table near the back of the chair, or the curtain may be introduced to fill the space. Let the background be well shaded on the side next the light, and bring the other side forward, so that the cheek will show a line darker than the ground. Light him up well, and be careful that the shadows are not heavy, as a bronze face will make shadows where a fair one would give none.

"Here is a pretty little girl. Now they want her standing, and will leave the arrangement to us. The end of this lounge is about the right height; let her rest against it, so she may lean partly on her arms as they lay in a graceful, easy position. That gives almost a profile of her body, and shows her hair well as it falls over her shoulders. Bring the face to about a three-quarter view, and let her stand on one foot, the other resting behind on the toe. This piece of velvet drapery thrown over the back of the lounge will give relief to her light dress. Set this basket of flowers in the end of the lounge, and give her some stems or buds to occupy one of her hands.. However, the picture don't balance well as it is, so we will introduce the front of this chair behind her, bringing it a little forward, so as to catch the focus of the instrument; on it we will lay her hat and sack, and let this hassock come in front of the lounge, on the other side, with the picture-book carelessly on the floor. We might introduce a doll, or any other childish plaything, with good effect, but there is sufficient. Now draw the curtain on the shadow side, so as to give one side of her face well in shadow, and let the background be quite dark Ten to twelve seconds' exposure will be sufficient. If we fail once, we try again as long as there are any hopes of success.

"Here's a lady wants her 'likeness taaken shtannin.' Says she 'wants it taaken sthrait!' She wants a square, front view of body and face. Now, we must reason the matter with her a little, and work her into such a position as will give what ease and grace such a body is capable of, which is very little. Every muscle is stiffened, the fingers stick out straight, and the eyes look as if about to burst from their sockets. She wants to know if this is Mr. 'Takemstrait's place;' says 'he takes likenesses iligantly!' It's a pity she hadn't found him, but evidently she can't read the constitution yet, or write her own name. That position is all we can do with her. There is not much chance for a reputation with such subjects as that.

But here is a sitter that promises something better. Appearances are deceitful sometimes, however. Oh, dear, she says she has had to wait so long that she is almost out of patience. 'Mr. Quicklight,' she says, 'don't keep folks waiting as we do here. Pictures finished and delivered in three minutes' That's the style; that's what people demand. They drive us into doing everything at railroad speed, and then find fault with us if it is not done well. The fact is, the progress of photography has been greatly retarded in this country by the mania that has existed during the past few years to do fast work for the sake of doing it cheap. The fastest men may blunder into something good sometimes, but to do uniformly good work requires great care and a little time to study. Now, if we can make this lady understand this, she may exercise a little more patience with us, and make herself more at home. She wants a full-length sitting, and had the good judgment to wear a full, flowing skirt. But she is terribly nervous, squirms at the head-rest, and declares she'd rather go to the dentist. We must proceed coolly and deliberately with her. If she complains that the rest makes her feel stiff, take it away, and let her adjust herself in an easier position; comply with her whims as far as possible, and she will cool down in a few moments, so that she will sit perfectly at ease with the rest. Considerable attention to the folds of her dress will give you a good opportunity to decide upon the best view of her face, besides making her feel you are taking a great deal of pains with her. The style of features and arrangement of her hair will give a fine view, nearly profile. The table, with books and ornaments judiciously arranged, will make up a parlour scene with the fresco background. A fan or book may occupy her hands. During this arrangement she has got over her excitement, and seems in condition now to get a good picture, which she says she has never had. We must draw up the curtain so as to light up the front of her face more, and make your exposure.

"Talk about patience with babies! It don't require half as much as it does with some grown persons. Babies we don't expect anything of."

A METEOROLOGICAL STUDY.

BY W. T. BOVEY.

If, just now, there chanced to sit in Parliament—as, happily, there does not—a minister of the meteorological department, his seat would most assuredly be an uneasy one, and anything but a sinecure, for our climate, proverbially capricious, has, during the past few weeks, indulged in such wild excesses that representative M.P.'s would doubtless be justified in asking of him the reason why the milk in the home jugs so persistently turned to curds; why cabbages so nearly resemble woody fibre; why the butcher should declare, with an air of injured innocence, that his blackened meat is "the weather;" and fishmongers attribute the staleness of their piscatory wares to a similar cause; why the brewer's man so often pronounces the premature decomposition of his beer to be "all owin' to the thunder;" and the fruiterer the blighted aspect of his fruit as the results of lightning. In short, there are so many little matters of a similar nature which the public, at this moment, would like to have explained, that even Mr. Glaisher, with all his well-tried skill and pluck, would despair to find sufficient reason to satisfy the host of interrogators; for if we judge by the experience of the present summer, we are bound to believe that all the birds of the air, the fishes in the sea, the beasts of the field, and every herb, together with every creeping thing, have more or less suffered from the excess of heat. Can it be that men are included among the chief sufferers? We have proof too abundant that such might be a near approach to fact. The Rev. Newman Hall once remarked that his barometer gave reliable indications which enabled him to anticipate the spiritual experiences of his flock. Can it be that atmospheric influences acting on human beings are the springs of human action? If such be so, the sooner this field of enquiry is fully investigated the better will it be for civilization, and the happier for poor humanity.

'Twas but a few years ago when the advent of July brought into requisition the services of the town bill-sticker, whose duty it was to placard the walls with a notice which, being surmounted by a fierce lion and a mild-looking unicorn, thus proved this order imperative: "Muzzle your dogs!" And the dogs were muzzled accordingly. Imagine the canine race to be the chief rulers of Europe at this moment: would they not be justified in turning the tables, by issuing an edict commanding the muzzle to be attached to men? Oh! ye men of science, who can move worlds by the force of reason, turn to see whether there may be atmospheric poisons that banefully contaminate the brains of kings. Show up evidence that would make it an act of mercy to muzzle even the rulers of the earth until reason reasserts her right of dominion. Hark! the shrill trumpet calls to action. Booming cannon; breech-loaders dealing out death at a rate that knows no intermission; sabres are crossed in deadly encounter; the thunder of impetuous cavalry charges, that leave in their wake the armless, the headless, the wounded, the dying. The earth is drunk with a fill of blood; the air is darkened with the smoke that overspreads a scene of horror before which "Dahomey's custom" sinks into utter insignificance, and Juggernaut's car, crunching the devotees of fanaticism, is made a thing of mild sport. Men call it glory when the dogs of war are loose. Then, wives, made widows, shout Glory! Mothers, made childless, endorse the cry of Glory! Children, made orphans, fill your craving stomachs with glory! Consider, the fight is not for hearth and home; 'tis more to gratify the false ambition of kings. Stay; can it be that these accumulations of woe are occasioned by the weather? I must, however, stop here, *not* to answer, but to crave the indulgence of my readers for the trespass I have committed on space. Let my excuse be, that I have seen the carnage of war, and am personally acquainted with its horrors; hence I would lose no opportunity of showing up the matter in its truest light and aspect.

Having hinted on the possible influence of heat on men, I turn now to its actual working on things photographic. Plates fog, actinism fails, and failures—partial and total—seem to be the order of the heated day.

In the printing department, matters under such adverse influence go perplexingly wrong. The papers yellow; the toning bath refuses duty; the printer is at his wits' end; and bad temper reigns throughout. Speaking personally, I can unhesitatingly assert that I have never experienced so trying and harrassing a time as the present summer season has afforded, a season which has called up all the resources of my knowledge and the reserves of my experience to keep my work in a workable condition. I have, before now, sweltered under the solar fire of Africa; I have perspired beneath an Indian sun; but never until this summer had I learned what solar heat really meant. And yet, with heat so intense, many photographers do not cease from wondering why their chemicals and materials should play them false. In my own case I continue to conquer the difficulties as they present themselves, and it has occurred to me that the information I have derived from recent experience might prove of some use to our friends who reside in tropical climes. I therefore venture on jotting down such particulars as apply to their special position.

In lieu of the usual five minutes, I floated the paper barely two. Reason why: Chemical action is much accelerated by heat; *ergo*, five minutes' floating at a temperature of 80° is fully equal to a floating of fifteen minutes when the bath stands below 60°. The paper was put into the pressure frames as quickly as possible after sensitizing, and whilst the paper was slightly damp. Reason why: The atmosphere was unusually dry; and it is pretty well known that excessive dryness means poor and flat prints, however rich the silver solution might be.

I printed in the coolest spot I had at hand, which, goodness knows, was hot enough. Reason why: A great heat accompanied with dryness induces a rapid reduction of the free silver. Hence the cause of the yellowness so much complained of lately. Proof: On an ordinarily warm day put a piece of sensitive paper in a frame, mask one half with black paper, the remaining half with a thick piece of board. I am much mistaken if it is not found that the better protected half retains its original purity, whilst the part to which heat has had access turns yellow when the frame has been kept some little time in full sunshine. When the prints are removed from the frames, hurry them at once into the coolest available place, and proceed with the toning directly the day's printing is completed. In my case, it has been a case of hot everywhere, but as heat has its degrees, I shaped my course by comparative rule. I have found the use of a small amount of sugar in the printing bath to be invaluable, as it enabled the hypo to remove the yellowness, which otherwise must have continued persistent. Nitrate of soda has also done me good service; not only through its deliquescent properties, but also from the peculiar attributes it imparts to the silver bath. No discolouration; no need of kaolin. A passage through the filter, and the solution was clear and bright.

Owing to the increasing hardness of the water, my gold bath needed constant attention. At the first token of inertness, the solution was pitched into the waste tub, and a new bath at once made. The washing trough was also an object of constant care. A thorough cleansing every day was requisite, as neglect would occasion a coating of a slimy yet transparent substance to gather at the bottom of the trough, which attacks and stains every print with which it comes into near contact. From a visual examination of the slime, and from a consideration of its action on a silvered surface, I conclude it to be the organic matter held in solution by the water combining with the hypo washings that proceed from the prints. That it contains sulphurous acid is made evident by its odour. That it combines chemically with the silver of which the print is composed is borne out by the stains it causes, and which in appearance are similar in every respect to the effect produced by sulphuret of potass or ammonia.

In conclusion, I need only add a hope that the few hints I have offered may prove of use to those who dwell in hot places, towards whom recent experience has raised within me a fellow feeling, which is said to make one "wondrous kind."

DIRECT CARBON PRINTING.

BY WILLIAM BLAIR.

In the Photographic News of the 29th July I observe a letter on this subject by Mr. A. Whitham, in which he suggests *sensitizing* the paper tissue through the back by floating as a means of obtaining direct carbon prints, and he asks whether I or others have tried such a process. I beg to inform him that I did so as far back as the year 1863. But I did not rest my process merely on the floating of the paper on the back. I was satisfied that that alone was not sufficient to counteract the strong tendency of the sensitive gelatine or other mixture to harden on the surface next the negative on exposure to light, and therefore my process was rather more complicated than Mr. Whitham's. To obtain the desired effect the tissue must be made under conditions to harden under the surface more rapidly than upon the surface, so that the washing up may go gradually inwards. With this view I used two coatings to the paper (sometimes three) besides an outer coating of dry carbon, dusted on the surface while slightly damp, to form the deepest shadows. My lowest coating was pure gelatine slightly tinted with colour; my next, albumen with syrup or gum, more deeply tinted with some very fine pigment or dye; and, over all, a thin coating of carbon, made to adhere by damp to the extreme surface. The sheet was sensitized by floating on the back for two reasons; (1), not to disturb the easily dissolved outer coating of pigmented albumen or gum on the other side, and (2) to insure greatest sensitiveness inside the surface. A very good, succinct statement of this process will be found at pp. 38 and 39 of Mr. G. Wharton Simpson's book "On the Production of Photographs in Pigments," to which I beg to refer Mr. Whitham. I shall also send along with this a few prints by the above process, made some years ago, which perhaps the Editor may be good enough to forward to Mr. Whitham, as I do not know his address,* and Mr. W. can compare these with his own results.

I may add, in reference to the remarks by the Editor in the note subjoined to Mr. Whitham's letter, that while he, no doubt, states with accuracy the general principle on which carbon printing is best conducted, still I think this principle may be modified to some extent, and the sensitizing through the back of the paper may be admitted as an element of modification. The sensitive substance is in this way, as it were, filtered through the paper. It must reach the upper surface in smaller quantity than at the back or in the centre of the paper, unless the floating is excessively prolonged, and it is well known in carbon printing that the degree of sensitiveness is materially affected by the quantity of bichromate present in the tissue. Irregular sensitizing produces a marled picture. I am disposed to say, therefore, that this is a field open for further experiment, and I am disposed to look at it more hopefully than I would fancy, from the Editor's remarks, he is inclined to do. There are practical difficulties, no doubt, in preparing and working a good tissue for direct printing, but, from the results already obtained, I am far from thinking that the difficulties are insuperable.

Bridgend, Perth.

[In all matters connected with carbon printing we defer very much to the opinion of one who for so many years has carefully thought of the subject, and so extensively experimented as Mr. Blair, and we would rather encourage, than treat with slight, experiment or suggestion in any direction which may aid in simplifying carbon processes. But we cannot help entertaining the conviction that experiment in the direction indicated is of a somewhat retrograde character, and that the highest success attainable must fall far short of the excellence already easily attainable by transfer methods. It seems to us that where any approximation to success is attained, its results must partake of the character of the best prints exhibited by Mr. Pouncy nearly a dozen years ago, produced by coating a "slack sized" or absorbent paper with a thin coating of pigmented sensitive gelatine. The gelatine colour and bichromate solution becoming partially incorporated with the paper, the thin insoluble layer forming the half-tones remained entangled with the paper instead of being washed away, as it must have been if the sensitive layer rested wholly on the surface. By this means an image with a somewhat woolly-looking gradation of half-tones was at times obtained; but the excellence was insufficient to give the process the remotest chance of competition with good silver printing. If we err, however, in our estimate of the possibilities of the method suggested, we shall have pleasure in being proved wrong, and shall gladly bow to the logic of facts.—Ed.]

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* If Mr. Whitham will forward his address we shall have pleasure in forwarding the prints.—Ed.

THE SO-CALLED AMERICAN WET ALBUMEN PROCESS.

BY JAMES GRASSHOFF.[*]

The white portion of a fresh egg is beaten or whisked to a froth in a suitable vessel, together with an equal amount of distilled water to which four or five drops of ammonia have been added; the vessel is afterwards covered with a few sheets of paper and a glass plate, to prevent evaporation of the ammonia, and the mixture allowed to stand for a period of twelve to eighteen hours. At the expiration of that time the clear albumen is decanted off, and may be kept for three, or even four or five weeks, according to the state of the temperature, if well corked up in a bottle. One egg yields about fifty grammes of albumen.

A mixture is then compounded as under:—

Distilled water	200 grammes
Prepared albumen, as above...	12 ,,
Iodide of ammonium ...	1·5 ,,

These are shaken together vigorously, and filtered, in such a manner, however, that no air-bubbles are produced; either, therefore, the liquid from the filter should touch the side of the vessel into which it flows, or a glass rod should lead the solution from the exit of the filter to the bottom of the receptacle serving as reservoir.

The glass plates are treated with acid in the usual manner as a preliminary cleansing operation, washing several times in clean water by means of a rag, and then placed under a jet of water or in a bath of distilled water, previously to being albuminized. The plates are only then sufficiently clean when the water runs over their surface uninterruptedly. In this condition they are taken from the water and allowed to dry partially, when the albumen preparation is poured over them in the same way as collodion, so that the whole surface of the glass plate is covered. The superfluous albumen should not be put back into the stock bottle, but allowed to flow first into the funnel, so that the liquid is invariably in a clean and pure state.

The plates are allowed to dry in a somewhat warm temperature, and may be employed after the lapse of half an hour; in cold weather the desiccation is of longer duration. Plates prepared in this manner may be relied upon to give as trustworthy results after being kept a week as immediately after preparation. Before employment, they are lightly dusted with a camel's hair brush, and coated with collodion.

The silver bath, by this method of working, is kept in a much purer condition than in the ordinary *modus operandi*. The collodion never leaves the glass during the various manipulations that the negative undergoes, as is otherwise often the case with old glass plates. So called fogged images, whose origin is due more to the employment of impure and inferior collodion than is generally believed, never split or break up; and, indeed, the advantages of the process, although at first sight somewhat complicated, are such as to call for its unqualified recommendation. From April, I have myself employed it with the most satisfactory results.

The amount of mixture above mentioned is sufficient for coating from sixty to eighty cartes-de-visite plates. The filters should be frequently replaced, and inasmuch as there is little trouble incumbent on the preparation of the materials, I would recommend, especially in summer, the mixing of a fresh solution every week, and the employment of fresh albumen at each such interval. Every photographer who has old plates requiring to be re-used will thank our American colleagues for this simple and effective process.

Should any suspicion of fog, stains, or other defects appear when the collodion and bath are known to be in good order, it is a proof that the albumen is out of order; in such instances the only alternative is to prepare the liquid anew with some fresh eggs, when all difficulties will at once vanish.

PHOTOGRAPHIC RAMBLES IN SOUTH WALES.

No. 4.

BY THOMAS GULLIVER.

Swansea Valley.

To the East of Swansea, watered by the River Tawe, is the beautiful Swansea Valley, or Vale, and for a trip of a day or two, either to view the scenery or to secure some nice views, no place round here is so well adapted as the Swansea Vale. Railways run up to Brynanam, and the stations are most conveniently situated on the line, bringing the traveller within most of the pretty views without much trouble or exertion of walking. The railway station is near the "Red House" Inn, not far from the North Dock. The third station is Glais. Here several views are ready to hand. A handsome stone bridge across the pebbly bed of the river, broken banks fringed with foliage, distant hills and cliffs, caused me a series of visits for stereo and large views. My first visit to this romantic spot was in wax-paper times, when cameras were more of a novelty than now. When the camera was fixed, a tribe of the young natives rushed down the river bank, and nearly upset camera and self in their eagerness to inspect the curious box. Intending to make a day's outing, my friends were about to spread a cloth on the green velvety turf, underneath the welcome shade of an elm tree; but we soon found that we were regarded as natural curiosities, and that anything like a quiet little pic nic was out of the question; so we prepared to be off. To change the papers, I had dived into a black bag; and this was the climax: they fairly pushed us off the scene, wondering what mad freak we should do next. The crowd increasing, we were glad to beat a retreat.

Taking the road over the bridge, and passing several interesting places, we came to a canal. Here one road branched off to the left, and led us to Clydach, a nice little village, about two miles from Glais. Here we found a variety of views: one, a particularly suitable view for wax-paper practice, at the rear of the "Miers Arms" Inn. Here we had it all to ourselves, and the time passed pleasantly in this retired nook. A weir across the river forms a cascade in the mid-distance, which is repeated by the blue lias rocks in step-like form down to the foreground, with the water trickling in small streams between the well-worn stones. The water on each side has washed away the earth, leaving bare the fantastic forms of the roots of trees.

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[*] *Photographische Mittheilungen.*

Having secured this and other views, we turned homewards by another route, which was much nearer. This is a footpath near to the Yuispenllwch Tin Works. This brought us in time to the station to save the down train to Swansea.

The negatives were developed next day, and turned out successful, and, with moderate care, the paper process is always so.

My next visit in this valley was to Pontardawe, which is seven miles from Swansea, and will afford a fine day's ramble amid some pretty scenery. An old one-arch bridge near the station, with river underneath and steep banks on one side, will do well to begin with if in dry weather, as at other times the stream is too wide and the waters too rough for a picture. Just through the village, only slightly to the left, may be had some beautiful views by following the course of the river up to Gellygron, where there is a waterfall which, in early spring or in autumn, is well worth attention; in fact, the whole of the distance up abounds in excellent peeps, but in summer time they are too much hid by the foliage, which here is most luxuriant. In the centre of the village is a handsome church and spire situated on some rising ground near the canal. This was erected and endowed by the late W. Parsons, Esq., formerly proprietor of the tin works near by. On one of the neighbouring hills is a famous mineral spring, whose waters are said to possess extraordinary curative properties.

We now leave Pontardawe, and journey on to Ystalfera, four miles and a half distant. A nice level road, passing through the pretty village of Ynisymudw, will introduce the tourist to some varied and picturesque spots; or, should the rail be preferred, the trains leave Pontardawe station three times a day. Ystalfera is a long straggling town, of no pretension to beauty, but the vicinity abounds in views of rough, wild scenery. The smoke from the various works is the great drawback. At this place my visit to the Swansea Valley was terminated. I have heard that places worth visiting are to be found higher up, but I refrain from publishing any hearsay travels, and will only describe places I have visited.

As some of the names of places sound so differently to what they appear when in print, I give the pronunciation as near as I can:—Cwmafon, Coom ah von; Pwl-Ddw, Pool-Di; Ynispenllwch, Ennis pen clook; Pontardawe, Pont ar do e; Glais, Glash; Clydach, Clid ack.

The above will give the reader some idea of the Welsh names of the places described.

In my next I propose to visit the far-famed Vale of Neath.

PRACTICAL METHOD OF RENOVATING AN OLD SILVER BATH.

BY PROF. J. TOWLER, M.D.*

The method given below, by which an old bath may be converted into an entirely new one, makes no claim to novelty, because I have already published it; but it has seldom been applied by photographers, either because it had escaped their observation, or had been looked upon as a novelty devoid of utility. I have tested it, however, by long practice, and do not hesitate to pronounce it the best and most expeditious of all its congeners.

We will suppose your silver bath is utterly useless by reason of the admixture of heterogeneous substances, such as ether and alcohol, nitrate of ammonia, of potassa, of soda, lithia, the oxide of cadmium, &c., and organic matter, such as particles of dust, fragments of collodion, &c., which it may contain, and that it is impossible to obtain a good negative in this bath. This being the case, we proceed as follows.—

1st. Filter the bath solution carefully. This removes all the foreign substances in the solution that exist in a solid condition.

2nd. Place the clear solution in a large porcelain evaporating-dish, and throw in a solid lump of zinc (about a pound or so); now pour into the solution, for every thirty-two ounces, one ounce of commercial sulphuric acid, and stir the mixture. A violent effervescence ensues, and hydrogen gas is abundantly liberated. This operation had better be performed outside of a window or door, so that the fumes may escape into the atmosphere. You will soon observe a quantity of flocculent matter floating about in the solution; this is the metallic silver which has been liberated from the nitrate of silver by means of the hydrogen, &c. In about five minutes withdraw the lump of zinc, taking care to brush all adhering silver from its surface by means of either a nail brush or a tooth-brush. The evolution of gas now ceases, and the solution becomes, in a very short time, clear and quiescent. We will, at this stage, see whether all the silver has been already separated from the nitric acid. For this purpose, therefore, place about a drachm of the clear solution in a small test tube, and drop into it a couple of drops of hydrochloric acid. If a milkiness and a white precipitate are thus produced, it is a sign that all the silver has not yet been separated from the nitric acid. It is consequently necessary to place the zinc again in the solution, and continue the operation of evolving gas for five minutes more, and at the end of this time to test the solution a second time for the presence of silver. Most likely all the silver has been removed from its combination with nitric acid. If so, wash the zinc well by means of a brush and water, and brush all that is loose or flocculent from its surface into the large dish. If there is still an effervescence going on in the solution, it is a sign that there are some particles of zinc still remaining undissolved. Remove these particles with a glass rod until no more bubbles of gas escape from the solution.

3rd. Dilute the solution with much water, and cause all the flocculent silver to settle to the bottom. Now decant all the liquid portion, throw it away, and add an abundance of clean water to the silver; stir the mixture intimately together, then let the silver again settle, and again decant as before. Continue this operation of washing until the drainings, after decanting, become perfectly tasteless, or cease to turn blue litmus paper red. The grey mass at the bottom of the dish is pure silver; all the ingredients which I mentioned as an admixture that rendered the bath unfit for photographic purposes have been completely removed.

4th. Having drained off all the wash-water, you may spread the pasty mass on the surface of the evaporating-dish, and put the latter in the sun to dry. Weigh the dry powder, and from the weight you can determine how much nitric acid you will require to convert the silver powder into nitrate of silver. Without troubling you with a discussion about chemical equivalents, I will simply observe, that for every ounce of dry silver powder you may take one and a-half ounces of commercial nitric acid. Mix the powder intimately together with the acid in the large porcelain evaporating-dish by means of a glass rod, and place the dish over the stove or a small charcoal fire (not in contact with the fire); red fumes will be evolved; these are offensive, so that you had better perform the operation outside the house. Let the heat be moderate; the silver will soon dissolve. If, however, after some time, there is a quantity of silver undissolved, add more acid, and continue the heat until it is entirely dissolved. It is not necessary to dry the silver powder for any other purpose than to obtain from its weight the approximate amount of nitric acid required. I never dry the powder in this operation myself, but add nitric acid by degrees to the wet mass until the solution of the silver is complete.

5th. The solution thus obtained is an acid solution of nitrate of silver; in its present form it is not suited for a new bath. The acidity must be removed. This I effect in the following manner:—Take a large glass funnel and invert it over the solution in the dish, thus forming a sort of chimney through which the acid and the steam can escape. The funnel must be large enough to cover the solution entirely within its sides. The solution is now evaporated (as before, in the open air) until no more fumes and no more steam escape. The instant you have arrived at this stage, the dish is withdrawn from the fire, and the solution is allowed to cool. When cold, you have a dry, hard mass, which is fused nitrate of silver, the best form of silver for making a sensitive bath. Weigh the fused nitrate of silver, and for every ounce (of eight drachms) take twelve ounces of water (distilled or pure rain-water), and to each ounce of the solution add one drop of nitric acid. If you want to take instantaneous views or very quick portraits with the bath, add no acid to the bath; for long exposures, on the contrary, add an extra half drop of nitric acid to each ounce of the developer: in this latter way you obtain extreme definition and clear pictures. Behold your new bath!

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* *Philadelphia Photographer.*

Now let us see the advantages of this method. In the first place, you ensure to yourself a bath somewhat better than an ordinary new bath made with the common crystallized nitrate of silver, better because your silver is fused. In the next place, you obtain from the old bath all the silver that it contains by a very simple and reliable process, which you can perform yourself at a very moderate expense. And, finally, the operation is so rapid that you can begin it any evening, and have a new bath next morning.

In addition, I would remark that the silver powder thus obtained can easily be purified from any organic matter, which it might possibly contain, by fusion in a Hessian crucible in a common blacksmith's forge, adding as flux a few fragments of nitrate of potash; or the powder itself can be disposed of at the mint for the full value of silver.

Furthermore, this silver powder, when rubbed up either with a little skimmed milk, or dilute mucilage, or a small quantity of varnish, forms an excellent retouching material for negatives.

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M. KRONE ON ALBERT-TYPE.*

The Albert and Lichtdruck process may be compared to the egg of Columbus: after this ovarian production had been made by the great discoverer to stand on end in the well-known manner, the bystanders, one after another, asserted that they themselves could have done as much. It was the same with the Lichtdruck. While Albert was still engaged upon his invention, and the first news crept out here and there concerning it, many industrious and worthy persons conceived the idea that they also were inventors of the process. It is far from our purpose to discuss, on the present occasion, the rights and claims which have been put forward by various photographers in regard to this question; we propose here only to detail the merits of Albert-type simply because we are acquainted with the capabilities of that process, and are as yet ignorant of the other similar methods which have been published; results must themselves proclaim the importance of these various printing methods. As we ourselves have personally investigated the Albert invention from its beginning, and have for several weeks laboured at the various manipulations under the direction of the inventor himself, our readers will not deem us intrusive in recording our opinion of its merits.

Nicephore Niepce may be considered generally as the father of the Lichtdruck. Although his efforts in the working of metal plates, in sensitizing, solarizing, and etching them in order to obtain therefrom printed copies, led to the discovery of Daguerreotype, and in the production of but one single picture only, still his was the first guiding idea towards the elaboration of Lichtdruck. Daguerreotype showed us what fine details could be produced in a light picture, while Talbot's invention proclaimed the possibility of multiplying the number of images. Both these advantages subsequently characterized Archer's collodion process, which brought photography at one stride to a wonderful state of perfection.

The production of mechanical prints, however, was by no means apparent even after Nicephore Niepce's idea had been considerably modified, and further progress had been made in the matter by the researches of Niepce de St. Victor, Talbot, Pretsch, and others, although by means of the important investigations of Poitevin, who first discovered the peculiar sensitive qualities of bichromated gelatine, several photographers—such as Lemercier, Asser, Osborne, James, Newton, &c.—were enabled to establish photo-lithographic processes of limited application. Moreover, certain photo-engraving processes, in which metal plates were submitted to a considerable amount of etching, were likewise elaborated. The pigment printing methods of Pouncy, Swan, and others could scarcely be considered simplified processes, and the results obtained are gelatine films of somewhat fragile character. Woodbury's photo-relief process attracted, with reason, general attention; but it is applicable only to small pictures, which are, likewise, in themselves, but thin gelatine films, and of a fragile nature. With all these processes, therefore, one could not help admitting that something else was required—something which should yield pictures possessed of all the advantages inherent to a photograph, together with permanency and the qualities of an ordinary engraving; to the solution of that problem, however, all our efforts had been hitherto in vain.

Albert now brings forward his Lichtdruck, and at once removes our difficulty. His pictures, printed in the printing press with greasy ink, may be produced in any quantity, and all from one and the same negative, and are, moreover, as permanent in character as ordinary woodcut or copper engravings and lithographs; they possess the same delicate detail, the same fine and truthful tints, from the highest lights to the deepest shadows, which one has learnt to appreciate in a good photograph, and they are without grain or structure such as are inseparable from photo-lithographs.

With the aid of the Lichtdruck, photography will for the first time become general, and attain world-wide importance; for, like the printing press, it will be of assistance to and favour all scientific, artistic, and industrial interests, and prove an invaluable pioneer in the progress of education. To illustrate, for instance, a book of a scientific character, we are at present compelled to lithograph the illustrations from the author's sketches, the salient points of which are not unfrequently tampered with by the uneducated lithographer; now we have merely to secure a good negative from the original drawing, or from the original object itself, and employ this in the production of the required number of printing blocks, which may be prepared in the same time as a lithographic stone.

A further important advantage of the Lichtdruck is, that the negative itself is not employed in the production of every print: the plate is necessary simply for the preparation of the printing blocks, and may then be put away in reserve to meet further demands. Thus it is possible to employ any number of printing presses, and so ensure any extraordinary large issue of copies, while in ordinary photo-lithographic processes, when one stone has been prepared and used up, the limit to the issue is reached. Of all the advantages enumerated, each is of such importance that any one of them alone would be sufficient to secure for the Lichtdruck the laurel wreath among all the multiplying methods known.

Let us return to M. Albert's printing establishment at Munich. This apartment occupies the groundfloor of a large building, specially erected by M. Albert for the purpose, and above it is another room of similar proportions used for the preliminary manipulations. The student's portion of the establishment is in the oldest portion of the building, and here are located those who desire to study the process. Excellent arrangements are provided, and every opportunity given to impart a perfect knowledge, without in any way interfering with the business section of the establishment, the students, in the first place, acquiring personally a thorough practical acquaintance of the various manipulations, and subsequently being allowed to help in the work at the main printing department. Upon the lady superintendent of the establishment, Fraulein Margaret, devolves the duty of initiating the Lichtdruck-thirsty souls into the first principles and mysteries of the Albert process, and this duty she discharges with wonderful tact and masterly skill. It is a consideration by no means to be underrated in regard to the process, that the different manipulations and details have been so arranged and set out as not only to be easily appreciated and understood, but also in such a manner that they may be, one by one, practically learnt without difficulty, and thus the whole series of manipulations acquired which make up the whole of this wonderful process. Albert is right when he says that after Lichtdruck was discovered it was necessary to invent, further, the practical methods of working it; this he has accomplished, and he is now still occupied in working out certain simplifications and improvements of the process.

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* *Helios*

Soon after our own arrival at the Albert printing establishment, the great master of lithographic printing, M. Lemercier, who has purchased the patent for France, arrived. Besides M. Lemercier, there were as pupils, at the same time as ourselves, M. Albert Frisch, of Rio de Janeiro, and M. Vervier, court photographer of the Hague. That there was no lack of friendly rivalry between us the reader may easily imagine, and when we assembled of an evening in friendly conclave round the table of our master, we invariably returned to the subject of the Lichtdruck, and we separated from one another with mutual promises to work bravely and to do our best towards the improvement of the process. The great task to be fulfilled appears to be that of vulgarising the method, so that, like lithography, it may be brought into practical use throughout the world.

[At the present moment, the honorarium charged for instruction in the Albert Lichtdruck process amounts to one thousand florins, Rhenish, or about eighty guineas.]

A NEW METHOD OF INTENSIFYING.

BY K. SCHWIER.*

Communicated from the Photographic Laboratory of the Royal Industrial College of Berlin.

A short time since I called attention to the production of a peculiar yellow film obtained in intensifying, which I thought might possibly be of value in the reproduction of engravings.

By continued manipulation of chloride of silver plates, I had occasionally obtained yellow precipitates with the aid of iodide of mercury, and, following up the course of my experiments, I ultimately determined upon the undermentioned method of procedure:—

The negative (of an engraving, for instance) is developed, very slightly intensified, and fixed; or, if thought necessary, the fixing may take place before any attempt at intensifying at all. After thoroughly washing the plate, the collodion film is covered at one sweep with a mixture of bichromate of potash solution and hydrochloric acid, and in this way the silver picture is converted into a chloride of silver film. The plate is again washed, and exposed for a few seconds in the sunlight, in order that the chloride may be acted upon by the light, a reaction of much importance.

A solution of bichloride of mercury is prepared, and to this is added a solution of iodide of potassium until the red precipitate of iodide of mercury which has been formed is again re-dissolved: this not very concentrated solution is finally poured over the plate, and the latter well washed in water, when the yellowish character of the film will be at once observed.

A HINT TO PHOTOGRAPHERS.

BY H. T. ANTHONY.

Many persons are troubled with having yellowish whites in their prints, and are unable to ascertain the cause. In hot weather, in using the Steinbach paper, the general cause of this effect is floating the paper too long, and having the silver solution too strong. In such a case, the paper should be blotted off as soon as it comes from the silver solution.

Another cause, which may occur at any season of the year, is found in the fact that a great many persons wash, tone, and fix their prints in the same apartment. Where much business is done, it is almost impossible to prevent the hypo from being spilled on the floor. It there dries, is ground by the feet into a fine powder, which is readily raised by currents of air, and distributed upon and into every vessel exposed. In this way hypo is conveyed into the washing tank used before the prints are toned; and although it may be in a very minute quantity, that quantity is enough to sensibly affect the whites of the paper.

The mere mention of this source of trouble is sufficient to enable photographers to devise means to obviate it.—*Bulletin.*

PORTRAITURE AS COMMERCE.

Dr. Andrew Wynter, in his recently issued "Curiosities of Toil," gives some interesting statistics of trade in photographic portraiture. He says:—

"The sale of cartes-de-visite is scarcely a fourth of what it was when they first came into vogue. All our photographic albums are filled; the whole of our friends are represented; and the celebrities of the day and children now mainly keep the photographers in employment. But the sale of noted individuals and of the Royal Family is still immense. Some of the wholesale houses do an enormous business in this article. The Messrs. Marion, in Soho Square, alone possess the cartes of many hundred thousand persons. This house does not photograph, but merely purchases of those who do. The possession of negatives of famous persons is a fortune to a man. Mr. Mayall, of Regent Street, who has photographed nearly all the Royal Family, has been paid, by the house of Marion alone, upwards of £35,000 for cartes-de-visite of its various members. The Stereoscopic Company, which photographs as well as purchases negatives of any celebrity that may be inquired after, possesses a portrait gallery which includes every known person of any distinction. It is scarcely necessary to say that any matter which brings an individual into public notice at once raises the value of his carte-de-visite. Tom Sayers's battle with Heenan sold fifty thousand of his cartes-de-visite. The gallant bearing of the Queen of Naples placed her photograph in every album in the kingdom. Many a man, through some accidental circumstance, wakes up and finds himself famous, and in two or three days his carte-de-visite is staring at him from every window in town. If an illustrious person is reported ill, there is an immediate inquiry after negatives, and as the pigeon-holes of Printing House Square are always kept well supplied with biographical sketches of statesmen about to depart this life, so the photographic printer anticipates their death by keeping a large supply of cartes-de-visite in hand. We scarcely know whether a statesman would be pleased or shocked at such an anticipation of his decease. It may not be pleasant for any man to know that others are eagerly making a market of such an event; but then, on the other hand, it must be highly flattering to know that when he has gone home and taken with him the original, he has left so many copies behind. Whether it was that Lord Palmerston had, during his lifetime, discounted his popularity, or because of any re-action which has occurred with respect to his memory, we know not, but it is certainly an undoubted fact that his carte-de-visite is no longer called for; whilst those of many of his contemporaries, now deceased, are still in very fair demand. Thus Cobden is still largely sold in the market, possibly because he represented a principle which is dear to the hearts of his countrymen."

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* *Photographische Mittheilungen.*

BE SURE TO REMOVE THE HYPO.

Notwithstanding the paper and ink that have been used to induce photographers to thoroughly wash their negatives after the hypo, I am afraid that so apparently simple an operation is in many cases very imperfectly performed, and that not so much from laziness or indifference as from ignorance of the requisite conditions. A large quantity of water may be poured rapidly over the plate, and yet the film remain saturated with hypo. Time is required. The collodion film is not quickly permeable by water, and still less quickly are any chemicals contained in it, no matter how soluble, removed. . . . A quantity of water may be poured over the plate, but it is only the surface which is thus washed. Time must be given to soak out the salt from the film, and when this is well understood, it is possible to work with a much smaller quantity of water—sometimes an important matter to the landscape photographer. In working away from home, a shallow ebonite dish is a most useful adjunct to the other apparatus, and only adds a few ounces to the weight. In my own practice, I flush the plate a few times only with water, and then transfer it to the ebonite dish, there to remain till the next is ready, when it receives a final dose before being dried, or put away wet, as the case may be.

It may be thought that a slight washing on the spot, to be followed by a thorough soaking on one's arrival home, would be effectual; but it is not so. Independently of the risk of the film slipping or being wetted again after a partial or entire drying, experience shows that the hypo is retained with great tenacity in a film that has once been allowed to dry. Its original spongy character is quite lost, and no reasonable amount of washing seems to avail.

I do not here enter into the question of preservative solutions, such as treacle and water, which enable the plate to be developed in the field, and intensified and fixed at home. I prefer—partly, perhaps, from old habit—to complete everything on the spot. Many operators, however, have removed hypo from the list of their field chemicals, and, instead, carry with them a bottle containing equal quantities of treacle and water, with enough alcohol to flow readily over the developed, but unwashed and unintensified film. A little practice is desirable before depending entirely on this method, which, until well understood, sometimes fails, or allows the plate to fog in the after operations.—R. S., in *Bulletin.*

Correspondence.

TUNICARE.

Sir,—In your last week's News, I notice two of your correspondents in trouble in respect to the use of Tunicare.

With your kind permission I will inform them how I overcame the very same little difficulty. First of all, see that the plate is well washed after the use of the acid; dilute your Tunicare; then filter it; it may be a little weaker, but it is just strong enough, and much finer. Dip a nice clean soft brush in, and run it over your plate; then you can flow it over with the greatest ease, and you will also find it a great saving, and sure to leave no irregular surface; in fact, the plates look beautiful and bright when dry and ready for use.—I am, yours respectfully,

R. W. Barnes.

Southport, August 9th, 1870.

COL. STUART WORTLEY'S PHOTOGRAPHS.

Sir,—The statement made by Messrs. Marion and Co. is untrue. They purchased a number of copies from me of prints from Mr. Thompson's negatives of the Turner pictures, and published them on their own account, and they sold two copies out of another set of my old photographs, and which they had on sale or return.

I have never had the slightest idea of asking Messrs. Marion to publish any of my photographs, and to say that they declined to do so is a serious perversion of facts.—Faithfully yours,

August 9th, 1870. H. Stuart Wortley.

Talk in the Studio.

Dr. Vogel's Reception in America.—It is an interesting illustration, both of the general enthusiasm of photographers in matters relating to their art and its benefactors, and of the warm-hearted hospitality of the American people, to read the record of the reception of our friend and *confrere* Dr. Vogel His visit is, apparently, one continued triumphal march.. Chicago, St. Louis, Niagara, the White Mountains, New York, Philadelphia, Toronto, Montreal, and other towns are visited in succession. In each place a committee is appointed to meet him, give him welcome, and make him an honoured guest. The spirit of hero-worship is always pleasant to witness, and this evidence of its almost unsuspected existence will suggest consolatory reflections to some of the benefactors of their art who have seen little evidence of gratitude amongst the photographic community, in which a tendency too often is manifest to doubt the value, or novelty, or both, of discoveries or inventions.

American Exhibition of Photographs at Cleveland.—An interesting proof of the amount of interest excited by the meeting of the National Photographic Association and Exhibition in Cleveland, Ohio, is found in the fact that *Frank Leslie's Illustrated Newspaper*—the American equivalent of the *Illustrated London News*—gives a whole-page illustration of the assemblage, in front of which we readily recognize the portraits of Mr. E. L. Wilson, Dr. Vogel, and others. Speaking of the exhibition, the same paper says:—"A walk around that immense room was a miniature tour of the globe. The scenery and the faces of every zone were there. The wild cliffs of the Yosemite Valley, the forests of Brazil, the dark coast of Patagonia, the sunny vineyards of France, the peaks and valleys of Switzerland, the rank woods of the tropics, and the cold, white ice-cliffs of the pole; were all included in the wondrous variety of subjects that made up this immense collection. But portraiture is the great glory of the camera, and it was from the myriad heads and faces that covered the walls that the visitor derived most satisfaction. Like the scenery, the portraits represented nearly every nation of which we have any knowledge. Berlin, Paris, London, Florence, all sent pictures that brought us at once in contact with the daily life of these far-off cities. On entering the Rink, the attention was first attracted by two handsome pagodas, which were fairly covered with pictures of every kind. The one on the left displayed an immense collection of the famous carbon photographs by Braun, of Dornach, a small village on the *Haut Rhein*, from which come the finest Alpine views that photography has yet produced. These pictures were large in size, and illustrated the finest scenery in Europe: the lakes of Switzerland, the vale of Chamouni, Mont Blanc, the Bernese Oberland, and the Upper Rhine. Next beyond was a wide space devoted to the goods of E. and H. T. Anthony, of New York, the largest importers of foreign photographs, as well as the most extensive manufacturers of American stereoscopic views, in this country. Naturally, the pieces they exhibited were of the choicest character. A number of portraits by Reutlinger, the great artist of Paris, were most noticeable, for they were of faces like Patti, Montalan, and the Princess of Metternich, so finely executed that they stood in the front rank at the Exposition of 1868. Here, too, were seen a number of portraits and marine pieces, exquisitely tinted, in water colours, by the new European process. Judging from these, it would seem as though the charm of our landscape and marine painters is in danger of being stolen by the subtle art of the camera. All the latest improvements and inventions were included in this display."

Retouching Negatives.—We have recently examined some prints from retouched negatives by Miss H. Brooks, a pupil of Mr. Croughton's. The work was most excellent, and characterized by a judicious reticence. Whilst coarseness was entirely removed, in no case was the likeness injured; the perfect texture of flesh was well retained, the true beauty of a living face in no case being sacrificed to the effect of smoothness in a marble statue. We admire skilful touching, but most strongly deprecate the tendency to over-finish, which softens away all the individuality of nature, and destroys the photographic truthfulness of the portrait. In the examples we have seen, Miss Brooks has not only done her work well, but has known when to leave off working.

India-rubber for Mounting.—We have often expressed our disapproval of india-rubber as a mounting material, as we have so often found the prints leave the mounts, and the india-rubber decompose. A correspondent has just sent us a print, however, which has been mounted for sixteen years with india-rubber without showing any lack of efficiency in this material for mounting. On examining it, we find the india-rubber has been used thick, an elastic layer of the gum of sensible thickness being found on removing the print. It has also formed part of a book, and has so been kept from air and light, agents which aid in the decomposition of india-rubber.

A Popular Portrait.—It is stated that during the last five years Messrs. Mariou, of London, have sold more than seventy thousand copies of the portrait of Adelina Patti.

Pension to a Photographer's Widow.—In the list of pensions granted during the year ended the 20th of June, 1870, and charged upon the civil list (presented pursuant to Act 1 Victoria, cap. 2, sec. 6), we note the following:—"Mrs. Charlotte J. Thompson, £40, in consideration of the labours of her late husband, Mr. Thurston Thompson, as Official Photographer to the Science and Art Department, and of his personal services to the late Prince Consort."

Indecent Photographs.—On Wednesday, Henry Warren, Little Heath Street, Potter's Bar, was charged before Sir Thomas Henry, on a warrant, with selling indecent photographs, &c. James Thomson, superintendent of the E division, deposed that upon seeing one of the defendant's advertisements in *Reynold's Newspaper* for the sale of a certain class of books, he commenced a correspondence with the defendant. Witness signed himself J. Kief, and on one occasion forwarded a Post Office Order for £2, and on another one for £3, to the defendant for the purchase of obscene books, &c., which were duly forwarded to him. Detectives Wm. Boyell and Fredk. Kerley, of the E division, stated that they saw the defendant's wife present the Post Office Order sent by Superintendent Thomson, and receive the money in exchange. The defendant was waiting outside the office. He was soon after taken into custody. He had nothing to say, and was committed for trial.

To Correspondents.

John Stone.—M. de Constant has been suffering from ill-health of late, otherwise we should have had his article on the coffee and gum process before this. It is promised at an early date.

Landscape.—The front lens of your portrait combination may be used as a landscape lens. First unscrew and remove the back lens; then unscrew the front lens, and screw it into the place usually occupied by the back lens. In doing this you necessarily reverse the position, placing the back surface to the front, which, for landscape purposes, is the proper position. The slit for the stop will also be in nearly the right position in front of the lens to give the best results. Of course, the focus of the front lens will be much longer than the focus of the combination—probably more than twice as long.

A. W. (Southampton).—As a rule, the best colourists are specifically engaged by the houses whose work they do, and the supply of really first-rate artists being less than the demand, there are rarely any available for occasional employment. We regret, therefore, that we cannot give you efficient information or advice. We have seen some very excellent work by Mr. Croughten, whose advertisement appeared in our last. Your letter did not reach us in time for answer in last week's issue.

G. S. (Burton).—The ether with which you thinned your collodion had been old and oxydized, by which a portion of it had been converted into acetic ether. This would, on addition to the collodion, liberate free iodine, which would cause the red colour. The re-absorption of the iodine, and consequent loss of colour, is in consequence of a peculiar reaction which takes place when methylated compounds are present in collodion. The presence of acetic ether in collodion generally causes insensitiveness and the production of a thin grey image. When your collodion gets too thick, it is safer, as a rule, to dilute it with a newer thinned sample of the same collodion than to add to it ether of the proper condition of which you are uncertain.

Provincial Business.—A lady photographer asks provincial amateurs, or agents, to inform her of any provincial town presenting a fair opening for a respectable business. We shall have pleasure in forwarding communications if any of our correspondents know of such a town.

Captain Turton.—We believe that Mr. Solomon keeps gradated backgrounds; but we do not know of any of a revolving or circular form. It would not be difficult, we think, to make or get made something of the kind. We hear of one of our readers having already made a concave background like that of Mr. Kurtz, described in our pages, which answers perfectly.

W. W.—Your simplest plan to test a solution containing nitrate of silver and nitrate of ammonia in unknown proportions is to precipitate the silver by means of a standard solution of a chloride, as we have often described. The proportion of chloride required to precipitate the silver in a measured portion will enable you to determine the exact amount in the solution. If you wish to ascertain the amount of nitrate of ammonia, the simplest plan will be to evaporate a portion of the solution after having precipitated the silver. Hart's volumetric apparatus, or the plan described in our last Year-Book, will enable you to form a quantitative estimate of the silver. 2. Plates of copper or zinc placed in the hyposulphite solution will precipitate the silver in the form of a grey powder, but the silver will be slightly contaminated with the metal used to precipitate it.

P. W.—Thanks. The prints and information are very interesting. The india-rubber mounted print is interesting, as showing that the decomposition of the gum is not inevitable. It is due in this case, we fancy, to two causes, namely, having been used thick, and preserved shut up in a book. Light and air favour decomposition in india-rubber, and the thinner the layer, the more subject it will be to change. We have seen many prints mounted with india-rubber, which have only been done a few years, and have left the mounts, a non-elastic friable film being all that remained of the india-rubber.

Photo Rostrevor.—We have given expression to your wish. We do not, unfortunately, know of anything or place suitable. It is probable that advertising may best serve your purpose; or else carefully looking out for advertisements of business for sale.

Simpleton.—Thanks. Scarcely suitable for publication.

B. L.—Much depends upon the character of the pyroxyline as to the best proportion. We have used samples of which ten grains dissolved in an ounce of solvents gave a limpid collodion; and we have used others in which three grains to the ounce gave a thick, glutinous collodion. We prefer a sample of which six grains to the ounce of ether and alcohol in equal parts gives a collodion of good body, but sufficient flowing qualities. The formula we give in our Year-Book gives a cotton of this character. We like, for ordinary use, three grains of iodide of cadmium, two grains of iodide of ammonium, and one or one and a-half grains of bromide of cadmium to each ounce. This collodion will work well within a week or two of mixing, and will continue good for six or twelve months.

R. D. F.—In some respects your work is good, but the various little evidences of carelessness will explain why you fail to secure the high-class custom at good prices which you state you have in vain tried to obtain. There is a great want of uniformity in the tone of the prints sent, some being good, whilst others are inky. Several of the prints are cut crookedly, and others are mounted out of truth. Stains on the backgrounds of several give a common, imperfect effect to the pictures. Slight things like these seriously detract from the worth of portraits otherwise good. There is artistic feeling manifest in several of the cards, and they are not bad photographs, but a slight air of slovenliness detracts from the whole. Fastidious care in all things is necessary to secure a high-class connection.

Articles by Carey Lea, Dr. Vogel, and others, and an article on Johnson's New Tissue, are again compelled to stand over for lack of space.

Several Correspondents in our next.

Photographs Registered.

Mr. H. Goodfellow, Clevedon,
Two Photographs of Rev. J. Victor'

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 624.—*August* 19, 1870.

CONTENTS.

PAGE
Another Photo-mechanical Printing Process—Rye's Process ... 385
Photographs by Moonlight, and Sunlight Effects ... 385
Foreign Miscellanea ... 386
American Correspondence ... 387
Transfer of Negative Collodion Films. By G. Scamoni ... 388
Intensifying Negatives. By K. Schwier ... 388
Arranging the Sitter ... 388
Notes on the Continent ... 389
Photo-mechanical Printing Processes. By Lieut. J. Waterhouse, R.A. ... 389

PAGE
Aids to Lighting the Sitter ... 390
Alkaline Development. By M. Carey Lea ... 390
Dry-plate Work. By J. J. Bardwell ... 391
A German Estimate of Photography in America ... 392
Recent Patents ... 393
Correspondence.—Tunicare ... 395
Proceedings of Societies —Photographic Society of Marseilles .. 395
Talk in the Studio ... 395
To Correspondents ... 396

ANOTHER PHOTO-MECHANICAL PRINTING PROCESS—RYE'S PROCESS.

We have just received from our esteemed correspondent in Philadelphia, Mr. E. L. Wilson, some examples of another photo-mechanical printing process, described as Rye's process, which is attracting some attention in the United States. The examples consist of landscapes and portraits, and resemble in general characteristics the prints by Herr Albert, or the imitations of his process described as "lichtdruck" prints. They undoubtedly possess some good qualities, having true half-tone, a thing a few years ago thought impossible in photo-mechanical productions. Some of these prints, from negatives by Mr. Kurtz, of New York, are very pleasing, whilst some of the landscapes are very poor indeed, lacking alike force, gradation, definition, and many other important qualities. The best of the examples is far inferior to the average of the productions of Herr Albert's process which we have seen. The process is put forward in America with somewhat startling claims, as will be seen from the letter of our American correspondent, and seems to have already excited considerable attention. The undertaking to produce a negative and any number of prints that may be required in one day is sufficiently novel to claim consideration from all interested in photographic operations. Mr. Wilson informs us that the inventor is a Dane, and that as the process is about to be patented, he will shortly be in a position to state further particulars. It happens, however, curiously enough, that on the same day we receive his letter we receive from the English Patent Office a copy of a just issued specification of a "New and Improved Process for Preparing Printing Surfaces," a communication to J. C. Mewburn, by E. Rye, of Odense, Denmark. This specification describes a process of photo-collography in many respects closely resembling Herr Albert's process as described in our last volume. A thick plate of glass is coated with a mixture of albumen, gelatine, &c., to form a preliminary coating, and, after hardening, it is again coated with a sensitive mixture of gelatine, &c., exposed to light, washed in cold water, inked, and printed at a lithographic press, as described by Herr Albert

In the specification, the second coating contains a number of ingredients, such as gum myrrh, gum benzole, nitrate of silver, iodide of cadmium, bromide of potassium, which were mentioned by Mr. Jessen, in his paper before the Photographic Society, as employed in the "lichtdruck" process, but which are not mentioned in Herr Albert's French specification as employed by him. This fact seems to establish a connection between Rye's process and the "lichtdruck" of Ohm and Grossman. Whether the gum resins, silver, and haloid salts mentioned really play any important part in the process, or are introduced to give a complex appearance to the formulæ in the specification, we cannot say. It will be noticed that in the preliminary coating mentioned in the specification no mention is made of a chrome salt. That is clearly a blunder in copying or printing, as in the provisional specification reference is made to an addition of "chrome" in the preparation for preliminary coating. The specification is as follows:—

The object of this invention is to allow of impressions, equal to those obtained by lithography, being taken on common paper with printing, black, or lithographic-printing ink, from photographic negative plates.

I proceed as follows:—

Over a very thick piece of plate glass, highly polished or plain, I pour a mixture composed of—

5 to 8 parts of gelatine
20 ,, 40 ,, albumen
and 8 ,, 10 ,, distilled water.

When this mixture has been poured over the glass, the latter is placed in a suitable oven to dry, after which the glass is exposed on the reverse side to the light; the glass is then washed, dried, and another mixture poured over it. This mixture is composed of—

10 to 15 parts of gelatine dissolved in 100 to 110 parts of water
8 ,, 10 ,, albumen
3 ,, 5 ,, bichromate of potash } dissolved in 10 parts of
3 ,, 5 ,, bichromate of ammonia } water
1 ,, 2 ,, gum myrrh } previously dissolved in 15 parts
1 ,, 2 ,, gum benzoin } of alcohol
1-10th part of nitrate of silver, dissolved in 4 parts of water
1-10th ,, iodide of cadmium } previously dissolved in 8
1-10th ,, bromide of potassium } parts of distilled water.

When this mixture has been poured over the glass, the latter is again dried in the oven, after which it is ready for copying. This is effected by placing a photographic negative on the glass thus prepared. The copying will require from half-an-hour to two hours. When the negative has been copied on the glass, the latter is washed under strong pressure of water, so as to extract all the chromate; the glass is again dried, and is then ready for printing. The printing can be effected with common lithographic ink, by means of a lithographic or other suitable press, and rollers of leather or glue.

◆

PHOTOGRAPHS BY MOONLIGHT, AND SUNLIGHT EFFECTS.

We have been favoured by Mons. Eugene Ogier with some singular and very interesting photographs, stereoscopic and extra whole-plate size. They consist of very unusual sunlight pictures, and pictures avowedly obtained by the light of the moon.

The sunlight pictures consist of sea views, with rocky foreground and distant coast; a brilliant track of sunlight on the water, and in some the image of the sun itself, partially enveloped in light, delicate clouds. The especially unusual feature of these pictures is the character of the sky and sun. The tint of the sky in the pictures is a light atmospheric grey, upon which lighter clouds are well marked; and the image of the sun lighter and brighter still, without solarization, without halation, or any defect beyond presenting an elliptical instead of a circular disc, the natural consequence of the exposure having occupied an appreciable time. The delineation by photography of such a sky and of the sun without solarization or halation is at least a very uncommon thing in photography.

The moonlight pictures are more remarkable, and, without satisfactory explanation or verification, would justify scepticism as to their mode of production. The production of moonlight effects by sunlight exposures is not an uncommon thing in photography; and some of the attempts of this kind have been of a character which might deceive all but educated eyes. The stereoscopic pictures before us are, however, of a very different character. They are less pretentious and apparently more veracious in their claims. The first makes no serious claims on the belief of the observer. It is labelled, "Après le crépuscule. Lune et effet de lune sur la mer, Jersey." The sea, sky, and foreground appear to have been delineated by the aid of full exposure and the remaining light immediately after sunset, a somewhat indistinct and blurred image of the moon, showing motion, appearing in the sky. No. 2 is in every way a most remarkable picture. It is labelled as taken at "onze heures du soir. Pleine lune et effet de lune sur la mer, Jersey." A view stated to be taken at eleven o'clock at night, it must be admitted, is a startling novelty. The foreground is a black mass, with a barely perceptible gradation of any kind visible; the sea is a mass only less black (being really a very dark grey), with the forms of black rocks projecting beyond the surface here and there, and a black coast line in the distance, dividing the sea from a dark grey sky of the same tint as the sea. In the dark sky the full moon is rendered as a crisp, sharply-defined white cylinder, without halation. The cylinder is one-sixteenth of an inch in breadth, and nearly five-sixteenths in length, indicating a long exposure and considerable motion. A tolerably well marked track of light is reflected in the sea. No. 3 is labelled, "Minuit. Pleine lune et effet de lune sur la mer, Jersey."

The midnight picture is different in several respects from that taken an hour earlier. Sea, sky, and foreground are even less distinctly marked than in the former, except where the track of light shines on the waters. This light is broader and more vivid, and the detail in the water is more apparent. There is some indication of masses of cloud in the sky; but the moon, which is much higher in the heavens, consists chiefly of a blurred white mass of halation through which a cylindrical form of still brighter light is barely visible. No. 4, labelled "Une heur après minuit. Plein lune et effet de lune sur la mer, Jersey," is a much more fully exposed picture. A small portion of dark foreground without much detail is seen; the sea and distant line of rock or coast are tolerably well made out; the sky is grey, and the moon, still high in the heavens, is large, broad cylinder of vivid light, nearly an inch long, and three-eighths of an inch broad, not so much blurred as in the last, and very much more so than in the eleven o'clock picture. The track of light on the waters is broad and vivid, and helps to make out the jutting rocks which interrupt the reflections.

Such is this very remarkable series of pictures, which bear very strong intrinsic evidence of the genuineness of the descriptions given. Of the mode of production, exposure, or other circumstances, we have no information whatever. Mons. Ogier states that the pictures were produced direct from nature during last month, under the conditions described, by a process and combination he believes he is the first to use. He regards the pictures as imperfect in themselves, but interesting as the first step in a new path, in which he will continue only if he receives the encouragement of competent authorities. On our part, we unhesitatingly pronounce the results as very interesting indeed, and we shall await with interest both further details of his operations, and further results of his experiments.

Foreign Miscellanea.

"Licht," the organ of the Berlin Photographic Society, prays for the indulgence of its readers during the period of the war, as several of the gentlemen of its staff are absent on military duty.

The same journal remarks that the army of the Crown Prince is provided with a very efficient photographic equipment and personal staff of operators, to be employed in the double purpose of aiding in the production of plans and of securing pictures of the various battle-fields.

Dr. Vogel continues his letters from America, his last two communications dating from Cleveland and Chicago, and giving a full account of the American Exhibition. He states that it is equal to that held in Berlin in 1865, and that nothing but the ready and energetic co-operation of the American photographers could have brought together and arranged so large a collection in the limited time at their disposal. Upwards of forty gentlemen volunteered their services in connection with the hanging and arrangement of the pictures, and thus the exhibition was organised and opened to the public within three days. The building is a very large one, being a kind of assembly rooms, in which, in summer, concerts and entertainments are given, and in winter skating promenades upon real ice take place. The collection of pictures is very popular, and the hall generally crowded with attentive spectators, and in the evening enlarged photographic transparencies are thrown upon a screen with very excellent effect. By the outside public the exhibition is, indeed, very largely patronized, and the leading journals have published important articles upon its merits. Besides the best American artists, those of Berlin, Paris, and London appear to be fairly represented, and to be well appreciated. As regards portraiture, Dr. Vogel thinks the Americans are very well advanced, especially in the so-called Rembrandt class of pictures; but in respect to landscape photography their productions are scarcely equal to those of their European brethren.

A simple method of freeing vessels from dry and coagulated albumen is, according to Dr. Stinde, to wash them with a mixture composed of equal parts of a saturated solution of bichromate of potash and English sulphuric acid.

As a substitute for yellow glass, M. F. Haugk, of Brunswick, recommends the employment of a yellow collodion applied on one or both sides of ordinary window glass. The yellow collodion may be prepared with—

Brazil wood	30 grammes
Absolute alcohol	180 ,,
Ether	60 ,,

the Brazil wood being digested for several days in the alcohol and ether mixture; the liquid is subsequently poured off, and again digested with two and a-half grammes of gamboge. After standing a few hours, the solution is filtered, and as much pyroxyline added (ten grammes) as will suffice to make a good thick collodion. With this the glass is coated, in such a manner that it remains as much as possible in a horizontal position, and, when dry, a further coating of collodion without gamboge is applied.

As a proof of the numerous Albert-type prints which may be issued from one plate, it may be mentioned that the *Photographisches Archiv*, *Mittheilungen*, *Helios*, and Photographic News have in turn all been illustrated with the picture representing the interior of the Albert printing room at Munich.

The *Rivista Fotografica*, an Italian monthly journal, which is published in Brindisi, and edited by M. A. Montagna, has recently appeared. The *Camera Oscura*, an earlier Italian journal, edited by Colonel Baratti, has for some years ceased to exist.

A background of a simple and efficient description is described in the *Rivista Fotografica* by M. Ottavio Baratti. It is a moveable and graduated screen, consisting of a broad, endless roll of canvas, having rollers at the top and bottom, and thus allowing it to be moved; the canvas is coloured in distemper, graduating from a dark to a light tint, and thus, when a sitter is posed and focussed, an assistant moves the background up and down until the tint most in accordance with the character of the sitter is attained.

AMERICAN CORRESPONDENCE.

Collodion Positives on Paper — The Rye "Light-printing Process" — New Copyright Law — The "Waste" Patent Again — The Advantages of Good Apparatus.

Collodion Positives on Paper.—The production of collodion positives in this country is immense. Tons of iron are monthly used, and tens of thousands of matts or mounts are required to give finish to them. "Ferrotypes" is the name usually given to such pictures, and they may be had at all prices, ranging from "sixteen for a quarter" up to a dollar each. Some most degrading pictures are turned out, but there are many good ones too. The great drawback upon them has been the necessity of using an iron plate, which contaminates the bath quickly, and makes it necessary to have duplicate baths always ready for an emergency.

Several substitutes have been offered for iron, but none seemed to answer until recently the Phenix Plate Co., Worcester, Mass., produced an article which promises to answer every purpose, and to take the place of the iron plate altogether. The new material is paper, glazed or varnished the same as the iron plate, and the edges are treated with a varnish which prevents the action of the bath solution upon them. The paper consists of two layers connected by a fibrous material, one outer surface being finished for the picture, and the other merely coated with black varnish. When the picture has been made, the two layers are stripped apart, and the picture may then be mounted on a card the same as a paper print from a negative. Another advantage this new material has over the iron plate is, that it will not rust in any climate, as iron plates often do. The manufacturers further claim that they obtain a much finer and smoother surface on the paper than they can on the iron. I enclose you a few pieces of the paper, the most of which, you observe, are of a warm chocolate tint, which is far preferable to the black, until recently in common use.

A year or two ago, a patent was granted a party here for removing the varnished film from the iron plate on which the picture had been made, and then the film was mounted on the cards; but this was objectionable on account of the difficulty in making the films adhere. The new material overcomes all trouble on this score, for the fibrous matter makes a capital surface for the adhesive material. The ferrotypers consider them as covering more advantages than anything made for the purpose. I think you will find they answer admirably.

The Rye "Light-printing Process."—A new mechanical printing process is creating some attention here at present among photographers. It is promised that "you shall sit for your negative this morning, and this afternoon we will give you as many prints as you are pleased to order," and for this reason the proprietors call it the "light" printing process. As it has not yet been patented, I am unable to give you the details of the process, but add an extract from a letter before me on the subject, which says:—"Permit me to call your attention to the most remarkable invention this age has produced. We take an ordinary negative, and prepare plates of zinc, steel, or glass to print from. In one hour we can prepare a dozen plates from one negative, and print with common printing ink on a home-made printing press. This process of sight printing from negatives will revolutionize photographic printing." The process is, I believe, the invention of a gentleman named Rye, recently from Denmark, as I understand, and who has connected with him an American gentleman with capital. A patent has been applied for, and if granted, I shall soon be able to give you further details of the process. Meanwhile, I send you a few of the prints. One or two are from negatives by Kurtz, from which you probably have a silver print. They resemble Albert's prints in quality very much, though the warm colour Albert uses makes his the most pleasing. It seems to me that Mr. Woodbury is still ahead of all in the mechanical printing line, and his prints certainly are the only fair imitation of silver prints, either in detail, half-tone, or colour. Both the Albert, the Rye, and all kindred processes seem almost unfit for landscape work, while with Woodbury's process the finest details in foliage, &c., are admirably secured. In portraiture, Woodbury is very far ahead, and all that seems to be desired further with his wondrous process is, to be able to print with a margin. I hope his next efforts will be in that direction.

New Copyright Law.—Until a few weeks ago, American photographers have been without any legal protection from piracy. The National Photographic Association interceded with Congress, and were successful in getting a copyright law passed that enables the photographer to copyright his works at very little cost, only requiring him to print upon the mount, entered according to Act of Congress, &c.

The "Waste" Patent again.—Not content with one defeat, Mr. Jehyleman Shaw, the acute gentleman from the State of Wooden Nutmegs, has obtained a reissue of his patent, and has commenced suit against Mr. Bogardus, the president of the National Photographic Association, for "infringement." There is something sublimely ridiculous to the English photographer, no doubt, in the idea of a man of the present century claiming to be the discoverer of the fact that gold and silver could be saved or recovered from spent photographic solutions; and more ridiculous still for a man to claim to be the originator of the idea that a vessel would be required to conduct such operations. And yet, in this age, and in this country, this notion is put forth and persisted in. It seems foolish to have to hunt up evidence and testimony to prove the fallacy of such notions, and yet the American photographers are compelled to do so once more. If our English brethren can throw anything in our way to defend us we shall feel greatly obliged. Any books or papers treating upon the subject previous to 1852* will aid us very much, and we should be glad to have their titles suggested.

The Advantages of Good Apparatus.—I have noticed considerable discussion in one of your contemporaries, lately, on the subject of apparatus. Perhaps it may be interesting to describe some convenient cameras now made by the American Optical Co., in New York. Rubber cloth is used for the bellows, making the body of the box as tight as a bellows; thus rendering it necessary to clip the corners off of the ground-glass, in order to allow the air to pass when the bellows is moved in and out. That part of the box which is most worn and used—*i. e.*, the plate-holder—receives the most care, as it properly should. The glass "corners" are used in the best boxes, as I have already stated, and we find them better than anything else. They are made of solid glass, and are merely one-half- of a little square glass dish, cut diagonally, one placed in each corner of the dark shield or holder. To catch the waste solution dripping from the plates, a little gutter is cut at the bottom of the shield; in the centre of this gutter is a hole, into which is fitted the mouth of a little "saving bottle," inserted in the wood below. This "saving bottle" is in shape like the glass in an ordinary spirit level, the mouth protruding upwards at one end, and is kept in its receptacle by a brass spring, so that when it becomes filled, it may be emptied, and replaced for service again. It avoids dripping on the floor, and waste of the silver solution entirely.

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* Our correspondent writes 1852 in his letter, but we believe that he means 1862, as that, we understand, is the date of the patent.—Ed.

The dark slide is generally inserted at the right side of the holder instead of the top, and when it is removed, a spring automatically drives a "cut off" over the slit wherein the slide fits, thus making the dark shield instantly light-tight, and obviating the necessity of keeping a focussing cloth over the slit to keep out the light; when the slide enters again it pushes the "cut off" on one side, where it is kept until its services are required again. The door of the dark shield is kept closed by a little piece of sheet brass screwed at each side, made to work in a little wire staple. For many of these little advantages we are indebted to the company I have named, whose immense factory, twice enlarged within a year, proves conclusively that they are appreciated and necessary. The workmen are all taught the practice of photography before they are considered competent to manufacture apparatus for the use of photographers. This is one great reason why their apparatus is so popular; and, be assured, there would be much less vexation caused if this rule was invariably adopted among manufacturers of apparatus.

I am glad to see you lifting your voice in behalf of an organization of photographers in your country. Could they have seen our grand exhibition, have attended our meetings, and have enjoyed the advantages of contact with hundreds of their co-workers, I am sure every one would favour such an association in England.

In my next I hope to tell you of one or two useful innovations that are just coming to light here, and will probably be useful.—Very truly yours, Edward L. Wilson.

TRANSFER OF NEGATIVE COLLODION FILMS.

BY G. SCAMONI.*

When a negative film is to be removed from the glass plate on which it rests, no varnish should be applied, but, instead, it is coated, as uniformly as possible, with a solution of india-rubber, prepared by dissolving small pieces of rubber in a mixture of equal parts of benzole and chloroform. This coating is allowed to set, and upon it is then poured some normal collodion containing a proportion of castor oil, the application of the collodion over the plate being effected as rapidly as possible by energetic moving of the plate. Before the collodion is poured on it is a good plan to warm the glass somewhat until the rubber film has become sticky; and, when the same has again dried, to proceed then with the collodionizing of the plate.

When the surface is thoroughly dry, the film is cut through with a sharp knife near the margins of the plate, and the same placed in a shallow dish of clean water, so that there is at least an inch of water above the film. With great care, and beginning at one of the corners, the film is then slowly raised until completely separated from the glass. If too much force is exerted to tear off the film, which adheres all the while very tenaciously to the glass, there will be formed upon the image narrow lines of a transparent nature, where the film of precipitated silver has become torn and lacerated.

After the operation has been safely performed, the floating image is removed from the water by pushing under it a sheet of cardboard, and employing the same as a support to lift the film from the surface. The image is then transferred between two sheets of fine tissue paper, and pressed in a heavy book, in which it is kept until further use is found for it. When the surface has dried in a smooth and even condition, it is well to paste or gum around the margins some strips of paper, by means of which the film may be the more securely and easily handled.

Care must be taken not to allow the warm hand to come into contact with the image thus transferred, as the heat generated is sufficient to cause the film to curl and roll up.

INTENSIFYING NEGATIVES.

BY K. SCHWIER.*

Communicated from the Photographic Laboratory of the Royal Industrial College of Berlin.

Instead of pyrogallic acid solution, I have, for some time past, at the suggestion of Dr. Vogel, employed the ordinary developer for the purpose of intensifying negatives. This is prepared of—

Sulphate of iron	50 grammes
Glacial acetic acid	30 ,,
Water	1,000 ,,

Or, instead of the above amount of sulphate, 70 grammes of the double sulphate of iron and ammonium may be used.

The silver solution, used in equal proportion with the above, consists of—

Nitrate of silver	20 grammes
Citric acid	30 ,,
Water	1,000 ,,

M. Grasshoff has also, in like manner, worked with the iron solution for the last few months with perfect satisfaction; and it may therefore be confidently recommended as a substitute for pyrogallic acid, which, as is well known, is a comparatively expensive material. For hot weather especially the pyrogallic solution may be set aside with satisfaction, on account of the disagreeable blue stains to which it gives rise.

When the operation of intensifying is carried to the extreme, there is a chance certainly of the precipitate becoming of a granular character, and on this account it is doubtless better to employ pyrogallic acid when reproducing engravings and objects of a like nature. For all other purposes iron may be used, but great care is always necessary in its manipulation, as the action is much more rapid than that of pyrogallic acid.

Another fact M. Grasshoff has recently observed. If a plate appears somewhat under-exposed, and is at once treated with the intensifier directly after development with iron, and without washing at all, the shadows will be found to come out in a more marked degree. If, however, the negative is washed between the operations, the film becomes uniformly intensified over the whole of its surface.

ARRANGING THE SITTER.

Mr. Roland Vanweike, who, as we mentioned in our last, discourses of matters "under the skylight" in our Philadelphia contemporary, gives, in the following paragraphs, some hints to his pupil on general arrangement and selection of accessories for special sitters. He commences by remarking:—

"I propose to dwell more particularly on what are termed plain pictures to-day, and show you my idea of making that style of work. It is not original with me, however, for many of the most eminent photographers practise it. I allude more particularly to the accessories, furniture, &c. Years ago, when nearly everything was made (either standing or sitting) full figure, there was little attempt made with accessories, the articles mostly used being a pedestal and column, appearing to be of immense height and great solidity, with a curtain sometimes draped around it, with a flashy figure, giving the most violent contrast of black and white in the picture; a chair with a high and elaborately carved back (no one was ever expected to sit in it), and a little round table with a covering similar to the curtain; the whole forming a *small* collection of absurdities such as could be found nowhere but in a photographic gallery. Then the subject stood with head, body, and eyes to the front, heels together, and toes turned out in regular military precision, one hand grasping (not the musket) the chair or pedestal, as the case might be, and every muscle as rigid as a post. Well, it is not to be wondered at that such work went out of style, and we may rejoice that it did; though even now we occasionally find a Rip Van Winkle from up country, or some crude specimen of the just-come-over fraternity, that wants just such a picture. But public taste, as well as the taste and good judgment of photographers, has made great progress within a few years; and nothing, perhaps, has done more to bring this about than the introduction of the beautiful and popular cabinet portrait. And what is applicable to them in this direction is applicable to larger or smaller pictures.

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* From the special report of the Russian Society of Arts.

* *Photographische Mittheilungen.*

"Now the idea is to have the operating room furnished something as we would furnish a nice parlour, or similar to this. Have tables, chairs, lounges, ottomans, hassocks, the same as we see in our homes every day, with a good variety of table and mantle ornaments—such as vases, flower-pots (with flowers not too large), bronzes (a few small pieces), and a small library of books. These small articles can all be kept in a case like this, made for the purpose, and are handy whenever wanted. Then the background is an important consideration, though one perfectly plain may be used with good effect. The one we have here works well. You see it is a sort of fresco, made quite dark, and the figure rather subdued. The lines dividing it into spaces give it the appearance of a richly papered wall in the picture. Then we have these light frames, with rough sketches in them representing pictures, which may be hung on the background to suit the fancy or style of the picture. With these we can make up a home scene that will make people exclaim, 'Why, this was taken in your own home; isn't it nice?' And when assured it was made in a gallery under a skylight, they can hardly believe their eyes or ears.

"Here is a reverend gentleman, so we will try and make up something to suit his profession. I don't think he has come to give us a sermon to-day. We will represent him in his study, surrounded with his books and papers. Take a seat near this table, nearly a side view of the body, and turn the face so as to bring it about three-quarters. That will bring in part of the table, showing that book-rack with books for his immediate use, and some manuscript near where his hand rests. An inkstand with pens, paper-weights, and this little statuette of Faith, may be arranged on the table with good effect. It will be in keeping to have a book in his left hand, or it may rest carelessly by his side. For pictures of this style I have this piece, painted to represent a library or book-case, which I place against the background on one side, showing more or less of it, as may be desired to give variety. One of the frames, representing a painting, may be hung towards the other side. Now this background, being quite dark, will bear to be brought well forward, so as to come as near the focus of the instrument as possible. A little drapery introduced behind the sitter will help to balance the picture. Now, we want the subject well lighted, and give a good, full exposure.

"The next is a lady for a similar style. Well, we'll make up a parlour scene. First, however, lay down this piece of parlour carpet, and let her stand as if admiring this vase of flowers. Let the folds of her dress hang so as to give good flowing lines. A chair, or the end of the lounge, may be introduced opposite the table, with a book or fan, or any appropriate article lying on it. I will take the library out of the background, and put another one of the frames in its place.

"Now for the next. He says he wants a 'burst' taken. I suppose he means a bust. We'll give him a 'burst' and let him go, hoping the schoolmaster may come round where he lives sometime, and prevent further mutilation of the English language.

"The rest of these seem to be all vignettes, and we will have another lesson on this at some future time."

NOTES ON THE CONTINENT.

An American photographer travelling on the Continent sends some notes of observation and experience to Anthony's *Bulletin*. Writing from Turin, he says:—

"I first visited the studio of Schemboche, and saw many excellent productions. He does a good business in 'imitation porcelain medallions,' of which I procured some samples, and enclose to you.

"Some of his appliances are, I think, a little novel. The camera, instead of having a cloth to throw over the head, stands within a square black cloth enclosure, and points out of what is not unlike a porthole. The entrance is behind, where a curtain divides to admit the operator, and falls together again, making the within quite dark. It is spacious enough to stand and move around in with good facility.

"The accessories of his studio are elaborate. One piece of furniture was like a highly ornamented counter-front, each panel of which was beautifully carved, and no two of them alike. Thus any one panel introduced into the picture varied the style. The reverse side of the counter furnished another set. The whole was mounted on castors so as to be readily shifted.

"I did not see any blue glass or curtains, nothing but crystal all around. The top light, which was large, and sloped in only one direction, had a reservoir at the summit, which supplied a stream of water flowing constantly over the whole surface, giving a waviness and softness to the light which was very effective. It also imparted a delicious coolness to the atmosphere, which would otherwise have been very oppressive. A variety of plants and flowers are constantly growing and blooming both summer and winter in this delightful studio, so that one on entering receives a very pleasant impression, which I thought would go far to dissipate the feeling many have that a photographer's posing room is akin to a dentist's chair.

"Every detail of this extensive establishment seemed well appointed. The proprietor stated that he was making about eighty negatives a day. He uses the Dallmeyer lenses for all his work, small and large.

"I next visited the rooms of H. Le Lieure, who had an establishment even larger than that of Schemboche. He also uses the Dallmeyer lenses. He states that he paid a large sum for the Woodbury process, but he is working it in a very limited way. I received marked civility at both these places, and was shown every detail of the many interesting departments. In the garden of this latter very extensive establishment is a high wall tastefully painted to imitate water, sky, clouds, trees, &c., by which groups are arranged, sometimes with carriages introduced. The tout-ensemble has magnetism in it, to attract and gratify the visitor."

PHOTO-MECHANICAL PRINTING PROCESSES.

BY LIEUT. J. WATERHOUSE, R.A.

PHOTO-LITHOGRAPHY.

Lieut. Waterhouse describes the photo-lithography practised at the Topographical Bureau of Bavaria, of Munich, as follows:—

Photo-lithography is used to a small extent. Very good results, both on the same scale and enlargements to five or six times the original size, have been obtained by the process described below. It differs from the usual processes in the substitution of albumen for gelatine, which has not been found to answer here. In experimenting with albumen, I have found that the prints are liable to become stained with minute black spots, and I noticed the same to be the case in some of the prints produced here; however, the process is well worthy of trial. The following are the details:—

1. Stout unsized paper is coated with albumen, care being taken that the latter is not acid.

2. The paper thus albuminized is sensitized by floating it on a fully saturated solution of bichromate of potash for five minutes. The paper is then dried in a moderately warm place, for it has been found that if dried at too high a temperature the albumen becomes insoluble.

3. In order to avoid wrinkling in the printing frame, the

sensitized paper is placed in a cool place for half an hour before use.

4. The print, having been exposed under a negative, is evenly coated with the following ink:—

Yellow wax	2 parts
Asphalt	½ part
Colophony	½ „
Venetian turpentine	½ „
Mutton tallow	¼ „
Storax	¼ „
Chalk printing ink...	2 parts

The rolling up must be done gently, otherwise the fatty substances which it contains penetrate the paper, and smudge when transferred to stone. The ink must be rolled on very evenly, and just so thick that the picture can be seen faintly through it.

5. The inked print is then immersed in clean water for fifteen minutes.

6. The water is constantly changed until all the yellow chrome salt is washed out and it remains colourless.

7. The surface of the print is now gone over with a clean roller or with a tuft of fine cotton wool; this causes the ink to leave the paper in the unexposed parts, whilst it adheres strongly to all the exposed parts.

8. The print is immersed in another dish of clean water; then half dried between folds of blotting-paper, and transferred to the stone.

9. The stone is then treated in the ordinary manner.

I was also given another formula for a photo-lithographic process, but I did not see any result; it stands as follows:—

A solution of—

Bichromate of potash	1 part
Gum arabic	6 parts
Water	36 „

is applied to the surface of a very level stone, and dried slowly; the stone is then exposed to light under a reversed negative; after exposure it is washed with water, inked, and then prepared as for ordinary lithography.

I was also given a formula for the etching preparation of plates of tin, which may be used in place of stone or zinc plates for printing forms and very common work; it consists of—

Solution of gum arabic	50 parts
Muriatic acid	1 part
Gallic acid	4 parts
Water	100 „

The transferring and after-treatment of the plate are exactly the same as for ordinary lithography.

AIDS TO LIGHTING THE SITTER.

Mr. E. J. Foss has recently patented, in the United States, a "Combination Curtained Screen," to aid in lighting the sitter. He thus describes it in the *Bulletin*:—

"I have an idea that a model to be photographed should be fully lighted with diffused light, sufficiently to give all the details if we were to make a picture from it. Then, if we let in a little direct light from just the point we want, we have about as near the thing as we possibly can get. If we attempt to get that diffused light by reflections, we are very apt to throw light into the shadows to such an extent that we produce distortion.

"Now, to come to the point, what I claim for my way of lighting is, that I first get the sitter lighted with the diffused light, or with all the curtains rolled off, leaving only the thin muslin. I have the space where the sitter is placed filled with light as we fill a bottle with water · then the pressure of light is equal on all sides, without any reflections. Now, if we make an opening on one side toward the sky or side light, we let in the direct light, which, if coming from an angle of about forty-five degrees, will touch up the prominent parts of the face: across the forehead, down the nose, on the cheek and chin, with a little high light on the hair, a spark in the eye, &c. Now, if we have not enough shadow, by moving the side screen a little from the sitter we absorb a little of the light, which produces shadow; or, if we want more difficult effects, we produce the shadows by regulating the curtains to suit.

"The chair being permanent, also, without moving the camera or background, we change from the whole style (all light) through to the most severe Rembrandt or shadow picture, with this combination of curtain and screen.

"The sitter is not annoyed by being tried in different points under the light, but quietly sits while we move the light around him.

"Another point gained. We are always able to use all the light we have or can get into our operating rooms. The time of exposure is as short as without it, from the fact that we use all the light we have, although sitters will sit twice as long under this arrangement of lighting as when they are exposed to so much direct light. I furnish the whole, complete, for $25.

"I think, from the variety of changes we are able to make (and with it we dispense with all other screens and curtains), it will come into quite general use when it is better known."

ALKALINE DEVELOPMENT.

BY M. CAREY LEA.*

Whilst some operators find little difficulty in getting any desired amount of density by the alkaline process alone, others are obliged to depend upon a redevelopment with acid, silver, and pyrogallic acid, obtaining a thin image only by the first development. It has seemed to me, therefore, that some suggestions and remarks on the action of alkali upon the image might not be uninteresting. I should premise that what I say relates to carbonate of ammonia, as I find that substance to be, on the one hand, more powerful than the carbonates of the fixed alkalies, and, on the other, more under control than caustic ammonia.

The influence of carbonate of ammonia on an exposed plate is sometimes very wonderful. If the exposure has been properly timed for alkaline development, the plate, when plunged into cold water containing pyrogallic acid in the proportion of half a drachm of sixty-grain solution to four ounces of water, gives no evidences of action, even after several minutes; if it does give such evidence, the plate has been more or less over-exposed. This is with cold water; hot water, especially if the dose of pyro has been twice as great, will bring out all the high lights. Supposing, then, that cold water has been used, and that the plate, having been moderately exposed only, does not give any indication of an image, let us now add a solution of carbonate of ammonia in the proportion of an eighth of a grain only to the ounce of bath; immediately the image appears. With this dose, or with one but little larger, the plate, if left for a sufficient time in the bath, will come out in all its details, and acquire such a strength that, when held up to the light, it will be judged to have reached printing density. It is now plunged into the fixing-bath, and, when taken out and washed, it is found that, although beautifully full of detail, it is so thin that it would be absurd to attempt to print it. A reduction of the strength of the fixing-bath is perhaps tried, but this makes no very material change, although it is certain that for plates containing bromide of silver to the exclusion of iodide, a very weak fixing-bath (say one part of hyposulphite to fifty parts of water) is best. So there is nothing to be done but to redevelop with silver, and as perhaps the same trouble continually returns, the operator very likely comes to consider that the redevelopment with silver is a necessary evil, and adopts it as a regular part of his system.

The explanation of this difficulty is as follows:—Carbonate of ammonia in conjunction with pyrogallic acid acts upon the exposed film very differently, according to the strength with which it is used. A very little of it is capable of bringing out every detail, and of producing a picture which seems to have printing density, but which will not stand the fixing, but comes out red and pale. A considerably stronger dose of it, applied to the same film, will give an equally good image in all respects, with the power of resisting the fixing bath. With a little practice one can tell with certainty, beforehand, that one particular image will break down in the fixing, and another, apparently no denser, will bear it perfectly, and look just as dense after fixing as before it. The colour is the criterion which enables us to make this distinction. If the image, after development, and before fixing, be reddish-brown, it will give way in the fixing, and come out red and thin. If it be brownish-black before fixing, it will come out of the fixing bath with a fine brown colour and good intensity.

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* *Philadelphia Photographer.*

The proportion of carbonate of ammonia which I have given in my directions for developing collodio-bromide plates will, I think, always give sufficient density, especially if the second portion of alkali be used. Latterly, however, I have been disposed to think that I got more detail in the deep shadows by developing more slowly, by adding but a few drops of a carbonate of ammonia solution at first, and letting the picture come out thin and pale at first; then, afterwards, bringing it up to the brownish-black colour by a good dose of ammonia. To be sure that the image will resist the fixing bath, we ought to end the development with carbonate of ammonia in the proportion of not less, I think, than thirty minims of eighty-grain solution to four ounces of water; this is one and a quarter grain of carbonate to the ounce of developing bath. I do not think that the gain by this more gradual development is very great, still it gives, perhaps, a little more detail, and even a little is always an object. Besides, the operation is more gradual, and, therefore, rather more under command. It is to be observed that the darkening under the influence of the strong dose of alkali at the end is very rapid, and that during this stage of the operations the plate must be very carefully watched, otherwise it may easily become too dense. In the alkaline development, when properly managed, density comes as easily as with an acid redevelopment with silver, and there is just the same need of circumspection to avoid over-doing the work.

The use of bromide in alkaline development is of the very first importance. Its value will be felt by every one, even from the first trials; but the best way of managing it, so as to get in all respects the best results of which the plate is capable, is learned only by long experience.

The plan which I am inclined to prefer is, to first add the pyrogallic acid to the bath, using half a drachm of sixty-grain solution to four ounces of water if I suppose the plate to have had about a right exposure. If, from other plates already developed, I judge that the exposure has been rather too long, I diminish the pyro a little; if, on the other hand, the exposure has been brief, I double it, using one drachm; and if the exposure has certainly been very short, I use hot water. The bromide I mix with the alkali, and introduce the two together. I mix them in the most varied proportions, according to the amount of exposure which the plate is likely to have had, using carbonate in eighty-grain solution (in water), and the bromide of potassium in sixty-grain, likewise in water. I use, in the case of a medium exposure, about one part of bromide solution to three or four of carbonate. But, with an under-exposed plate, I use as much as eight of carbonate to one of bromide. If the plate has certainly been over-exposed, I increase the bromide, and, in cases of great over-exposure, have used even as much as five of bromide to one of carbonate. These cases are exceptional only, however, and will serve to show how much ordinary conditions may sometimes be varied with advantage. Much will depend, also, upon the nature of the process by which the dry plate has been made. A large dose of bromide gives very brilliant plates, but not as harmonious as when less is used; on the whole, it may be said that the best rule is to use enough bromide to keep the plate clean, and no more.

It is impossible to over-estimate the value of the alkaline development. No one who has once acquired familiarity with it (and this is not in the least difficult) will ever use any other method for the development of dry plates.

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DRY PLATE WORK.

BY J. J. BARDWELL.

To one who makes landscape photography a business, then, I should say, by all means use the wet plate; but even then, as an auxiliary, the dry plate is very valuable. A little coffee, white sugar, citric acid, and pyrogallic acid, are all the extra requirements. If I were going on a long journey, and wished to take a large number of plates with me, I should then use the tannin plate. With a common developer it is slow, but is very reliable, and can be worked with an alkaline developer very quickly; but as it requires more time and care, and needs greater experience in the preparation and developing, the process is not that which I should recommend to the beginner, nor to be used in an emergency.

In making a bath for the coffee or tannin process, I recommend the use of considerable acetic acid, and it little matters how much. I have used as much as one ounce of No. 8 to twelve ounces of bath solution without finding any bad effects; but any bath that works well with a wet plate will be satisfactory. The collodion should have a good body, giving a creamy film. With a thin collodion it needs the back of the plate to be coated, to prevent blurring, which will not happen with a creamy film. The plate should be washed with water, and while still wet flowed with the albumen solution and dried, before coating with the collodion. The coffee solution should be boiled after adding the sugar, for if not, on keeping the plates, the sugar will crystallize and make spots on the plates. If to be used within a fortnight, then a common infusion of the coffee and simply dissolving the sugar is sufficient. I think I like an infusion better than boiling, but why it should be so I cannot tell. White sugar, after being boiled sufficiently, loses the power of crystallizing. Brown sugar retards development, and tends to make the picture hard. The browner the sugar the less suited for this process. I have always found my plates, both coffee and tannin, to keep better, more free from spots and stains, and develop more evenly, when flowed with a solution of bromide, than when simply washed. It has been said to render the plate less sensitive, but it is not so; the plates are in every way benefitted by it, and I would advise no one to omit it.

In the coffee process, I would advise that the time of exposure be always enough without resorting to pushing, for many times on making the second application of the developer a transparent and almost invisible fog will sometimes overspread a portion of the shades, and more especially among the finer detail of the negative, so far as to destroy its printing qualities. I have never met with the same effect in working any other process. The colour of the coffee plate is very non-actinic, and care has to be taken, in developing, not to carry it too far. A good coffee negative has printing qualities not excelled by any dry process that I have ever tried. The tannin solution will keep for a long time. I have a large bottle of it by me that I have had several times to remove an accumulation of fungus, that seems to grow and prosper in spite of carbolic acid, but makes excellent plates, and is over two years old. I never keep a coffee solution, it is so easy to prepare. I have never observed that it made any difference in the kind of coffee used. My experience is that the plates should be dried quickly and well, and I therefore always dry in a warm room, and quite close to a hot stove. It has been recommended to use an iron developer with coffee plates, but my advice is to use the pyrogallic developer. In my hands it has always proved the best and most manageable. In using a substratum, I have found gelatine to be the best for tannin, but for the coffee plates I have had better success with thin albumen—say one ounce of albumen to sixteen or twenty of water, adding a small quantity of ammonia. The tannin acts on the gelatine and forms a combination with it; but with coffee it will sometimes slip as if no substratum had had been used. The albumen solution can be used by moistening a piece of cloth with it, and just running it round the edge of the plate for an eighth to a quarter of an inch all round on the side to be coated; it will dry almost as quickly as done, and will many times be quite sufficient. There are many valuable uses to which the dry plate might be made available in our gallery practice, especially in enlarging and in multiplying negatives, and in making slides for the magic lantern. For instance, your having a carte negative of some subject for which, on a sudden, there is a large demand, say two or three thousand copies, and at the same time an order for copies of the same 4-4 size You make a transparency on a dry plate, of which you are supposed to have a supply—or, if not, could soon have some ready—and from that transparency make a sufficient number of negatives as perfect in all respects as the original, so as to print, in one or two days, all required to fill the order. To make the 4-4 negatives, the transparency is copied in the camera, as many operators make opal pictures. Some find a deal of trouble in copying maps, drawings, and such like, from a difficulty in obtaining a sufficiently dense negative to make a good copy, sharp in its lines, and at the same time to give good whites; for such purpose the dry plate is excellent. The intense sharpness and fineness of the deposit on a tannin plate renders it very valuable for microscopic purposes. The dry process has not been looked upon with much favour in this country except by a few, but of late many have tried it, and with considerable success. To those contemplating working in this line I would say, that the back numbers of the *Philadelphia Photographer* and the Photographic News Almanac contain all the various formulæ for the many different dry processes, together with the mode of working the same in detail; and on making up your mind, the process you wish to try, stick to it till you have the same mastered. Work hard, have patience, and stick to one process, and you will soon succeed to your entire satisfaction.—*Photographic Mosaics.*

A GERMAN ESTIMATE OF PHOTOGRAPHY IN AMERICA.

We have been favoured by Mr. H. Hartmann (the Secretary of the Society for the Advancement of Photography) with the following letter from Dr. Vogel:—

"*Cleveland*, 11*th June*, 1870.

"My Dear Friend,—In this letter I will report you of the Cleveland Exhibition, which is to be closed to-day.

"When I arrived here with Mr. Wilson—that is, eight days ago—I was curious to see how it was possible to arrange an exposition within three days. When arranging the Berlin, and later the Paris Exhibition, we could not do it in less than a fortnight. The cause was very simple. There were only about eight hands working, while here, from the first, there were perhaps forty at hand. Each photographer here considered it as a cause of honour to help, and thus the admirable work was done in three days, and created with that an exposition no less extensive than at Berlin, 1865. It filled a beautiful hall of 250 feet in length and 100 feet broad, called 'Rink,' which, in summer, is used for concerts; in winter, however, when the parquet floor is taken out, for sliding on skates. Such rinks are to be found in all the larger cities of the northern United States. The aspect of the sliding public, with the numerous ladies in brilliant toilet, is said to be almost fairy-like. In the covered room the ice is very durable. Now the aspect was different, but not less agreeable. A great number of wooden walls divided the hall in separate niches, adorned with pictures, most of which would be considered as masterpieces in any exposition; between them were numerous tables with chemical objects, apparatus, papers, &c.

"A gigantic plate at the door of the rink announced to the public in coloured characters the opening of the exposition of photographs from Europe and America; and, in order to attract still more attention to the wonders of the exposition during the evenings, photographic dissolving views were cast on a large sail, extended on the opposite side of the street, by Mr. Black, of Boston. This had a great effect. The public came in like a stream, and walked through the gas-lighted rooms, listening to the the tunes of gay music.

"I observed that the public here took much more interest in the exposition than they do in our country in such cases. At the Berlin Exposition we met with great indifference on the part of the public. In our home, where prejudice often so much hinders every free development, the photographer is generally not too highly esteemed, and scarcely ever considered as an artist. Here, in America, where such a difference of rank is not known, he enjoys a much better and more esteemed position, if he is able to fulfil it. Here the photographer is the chief representative of creative art; painters and sculptors are not much here (the former are often obliged to work for the photographer for their existence); in Europe, however, the artists take sufficient care to prevent the photographer from becoming too arrogant.

"Here I had many occasions to observe how the public was helping and assisting the photographer when working out of doors on public places or taking landscape views, while in our country they are arrogant, and pretend to know all that better.

"I was much delighted when I observed the public and the photographers standing with the greatest interest round the Berlin pictures, and could not cease admiring them, though there were pictures from elsewhere, which no Berlin photographer need to be ashamed of. The American takes the good where he finds it without being jealous, and endeavours to make use of it, while we often talk in a depreciatory tone about the new which is offered to us.

"The photographer R., a brave German, said to me: 'Tell MM. Milster and Lœscher that by imitating their pictures and manner, I have gained enough to be well situated.'

"For the same reason numerous imitations of Salomon, and Kurtz, with his 'Rembrandts,' his medallion cabinets, his round hollow background and reflector, all of which are immediately imitated, have given a new direction. The American quickly accepts such things; he is thankful for every instruction given to him. Being too much engaged with work and business, he is not able to experimentalise himself, and thus he meets him who works to improve his art with all his warmest sympathies. I will not talk of the thanks that are obtained by the German inventor or improver, *facto loquuntur*.

"But to the Exposition. The Berlin Exposition was eight days opened before the critics began to speak of it—naturally, first, in a very interesting, but for the public living introduction. Here, twelve hours after opening the Exposition, it was treated by printed articles, which immediately spoke of the real matter itself. There may be some incorrectness in these reports, but they gain their aim. The *Cleveland Leader* and *Cleveland Herald* say of the Berlin pictures:—

"'These pictures are exceedingly fine, and some of them demonstrate that the art of photography is better understood abroad, in some respects, than in America. Certainly, some styles of photographs exhibited by European artists cannot be approached by photographers in this country.

"'Starting from the stage and proceeding along the east side of the rink, the visitor is first attracted by magnificent views along the coast of Labrador, and in the Polar Sea, taken by Mr. T. W. Black, of Boston, last July, for Mr.

Bradford, the artist. On the next screen is to be seen a collection of photographic reproductions of celebrated paintings by Dusseldorf artists, made by Ernst Miltser, of Berlin, Prussia. Lovers of art linger long over these pictures.

"'By the side of these are some curious specimens of photolithography, by the Brothers Burchardt, of Berlin; views of the Alps, drawings, and very old scriptures. The latter are so excellently copied that they surpass all the painful production of elder methods. This speciality of photography is still in the beginning, but the results of it prove to us that the art of lithographic drawing is to be supplied by a much quicker and more exact manner of reproduction.

"'The other side of the screen contains almost the best specimens of the Exhibition. Here are the excellent portraits by Lœscher and Petsch, of Berlin, distinguished by softness and delicacy, and some other very fine portraits taken by Mr. Gutekunst, of Philadelphia.'

"Then the Adam-Salomon pictures are honourably mentioned, as well as the good imitations of this style by Robinson and Cherrill, of London.

"Then the collection of Wilson, Hood, and Co., Philadelphia, is spoken of as a very interesting part of the exhibition. In the same manner are named, among others, Kilburn Brothers, William England, Francis Bedford, and Lœscher and Petsch, with their gems of German life.

"Besides these—continues the report—are some more of Ernst Milster's work, one picture, a portrait of a lady, being as fine an example of photographic art as exists, probably. Here, too, are some beautiful portraits by Charles Reutlinger, of Paris.

"On the other side of this screen are some magnificent portraits by J. Grasshoff, of Berlin. One frame contains twenty-four different likenesses of the same young lady. This collection furnishes a study for artists, and is a great curiosity. Next to these are some exquisite landscape and interior views by Julius Schaarwaechter and S. P. Christmann; and a curious illustration of the effect produced in pictures by distance from the lens in the camera, prepared by Dr. Vogel, of Berlin. Here, also, are views of ruined temples, and the interiors of tombs in Egypt, taken by Dr. Vogel. Above these hang some enlargements of photographs made by artificial light; these are by Romain Talbot, of Paris.

"Most of the photographs were portraits. Landscape views were tolerably numerous, but most of them I had already seen. Such were Braun's views in Switzerland; Ferrier's transparent views; Watkin's beautiful views of the Yasomine Valley in California, a valley already far famed by its grand rock-walls of 3,400 feet in vertical height, as well as by its gigantic trees of 300 feet high, and by its immense cataracts.

"Without intention of doing harm to anybody, I must say that of all American pictures the German-Americans are the best of all.

"I must name here Messrs. Kurtz and Merz, of New York, whose pictures are well known as excellent in Berlin. I must mention here a series of large heads, in the size of carte-de-visite, by Mr. Merz; then there is Mr. Scholten, at St. Louis, one of the best representatives of German photography in the Far West, whose excellent pictures I shall have the honour to show you after my return; also Mons. Rocher (of the Lusace), at Chicago, who works in the Berlin style; Starke, at Lannesville, who also has produced some very good landscape views; Lœffler, at New York, and Gutekunst, at Philadelphia, both working in the Salomon style.

"The whole exposition showed only first class works, and those of doubtful worth—whereof was found plenty enough at the Paris and Berlin Expositions—were not seen here, and thus the total impression was very favourable to the American photography.

"Besides the German—among which I count also Mr. Reutlinger, who was very well represented by Mr. Anthony—only few Europeans were represented. The only ones I could mention in this kind were some pictures by Salomon, which, to my astonishment, did not attract much attention, though they were the beginning and the impulse to a new style, which in America is much imitated; then some works of Robinson, and some of Abdullah, of Constantinople, and of Sebastianutti, of Trieste.

"Among the genuine Americans (Yankees) there were, above all, Howell's pictures, that were distinguished by delicate effect of light, beautiful modulations, and chosen position. They sometimes looked like imitations of Kurtz's pictures. Howell has chosen the most celebrated beauties of the theatres as his models, which greatly helps the effect of his pictures. Many of them are much retouched on the print. I must mention here his "Photo-inks"—large portraits on a pale rose ground, with tender white lights—which probably are produced by retouching the finished proofs in the lights with a solution of wax, and then colouring them by a bath of aniline colour; by this all the waxed lights would not accept the colour and remain white.

"American-English specialities are Sarony's photo-crayons. Imagine a vignetted photograph, the under part of which is lined in the style of lithography, and you have a photo-crayon. Enlargements by this look somewhat like lithography. The lines are made here on the finished print by hand-work, and the effect of it was tolerably good on some Sarony originals. Smaller pictures of this kind are made by laying a glass positive on a white paper, on which before such lines in the crayon manner are printed by means of lithography. Such papers, printed with lines, are offered here in the trade, but I do not much like the smaller proofs of this kind. Besides this, the Rembrandt style is seen here in a great number of proofs. About that the next time.—Your friend, Vogel."

(To be continued.)

Recent Patents.

PHOTO-BLOCK PRINTING.

BY T. J. DENNE AND H. BILLINGSLEY.

The following patent is for a method of producing surfaces for block printing and lithographic printing by means of photography.

Our invention relates to a means of producing a block from a photographic negative in the following manner:—We take an ordinary negative on glass, and coat it with a mixture of gum resin, bichromate of potash, and distilled water; this we pour or spread upon the glass, and allow it to dry; we then expose the negative to the action of light (artificial or natural), and print (as it is termed) a picture in the film or coating formed by the mixture; when this is sufficiently done, we dissolve out by plunging in hot water or otherwise washing out the non-solarized portion of the mixture, leaving a picture raised or in relief on the glass, from which a mould or an electrotype can be taken, from which other printing blocks can be produced and used in the usual way in printing machines.

Having thus far explained our means and method for producing a printing block, we therefore desire to claim, under this head of our invention, the employment of and the mixture on a glass negative as before described for the purpose of enabling a printing block to be produced.

The second part of our invention refers to the employment of a mixture spread upon paper, and the means hereafter described in treating such paper to produce a picture, from which photo-lithographic copies can be taken. We employ a mixture composed of the following ingredients:—Bichromate of potash, gum arabic, and distilled water. The paper when coated with this mixture is allowed to dry, and is placed under a negative, and a copy printed on it; when it is sufficiently done, we cover the surface of the picture thus taken with a groundwork of litho-tint produced on or from a stone or plate; it is then floated on warm water to remove the free gum and ink, and the picture can then be transferred on to a stone to be printed from in the ordinary manner.

We claim under this head of our invention the mixture hereinbefore described for the purpose of producing photolithographic pictures or designs as mentioned.

The next part of our invention relates to a means or process of producing negative copies of pictures and designs without the use of a camera or lens. We coat a sheet of thin paper with chloride of sodium, and allow it to dry; we next float it on a bath of nitrate of silver of a strength suitable for the purpose, say about sixty grains to the ounce of water in the summer months, and one hundred grains in winter; when the paper thus prepared is dry, we expose it under whatever we wish to copy in a frame, and so produce a reversed or negative picture on the prepared paper; when this is sufficiently printed we plunge it into a bath of hyposulphite of soda, which fixes the picture; it is then washed and dried, and from the negative thus obtained we can print positive pictures in the ordinary photographic printing-frame in the usual way; or we can print transfers to throw down on stone, and print from, as by the photo-lithographic process before described. To aid this process we have at times thought it advisable, according to the state of the atmosphere, to focus by a glass light down upon the object copied from.

Having now described the nature of the third and last part of our invention, we claim specially producing negative copies of pictures and designs upon paper, from which positives can be printed in the manner and by the means substantially as hereinbefore described.

IMPROVEMENTS IN PREPARING CARBON TISSUE.

BY J. R. JOHNSON.

THE following is the specification of Mr. Johnson's new patent for improvements in carbon printing:—

My invention consists of certain improvements in the preparation of the surfaces employed in the production of that class of photographic pictures in which the colouring matter is carbon (lampblack) or other pigment.

1. It has been usual, in obtaining such pictures, to mix the pigment ground in water with gelatine, albumen, or gum, or their analogues, and with sugar and its analogues, and to spread the compound upon paper or other surface. The sugar is added for the purpose of giving flexibility to the prepared paper, of increasing its sensitiveness to light, and its solubility in water, with which it is subsequently treated to reveal or develop the picture.

The paper so prepared is floated or immersed in a solution of bichromate of potash, and when dry is exposed to light under a negative. The parts acted upon by light then become more or less insoluble in proportion to the intensity of the action, and remain upon the paper, constituting the picture after its immersion in warm water, while those unacted upon wash away and are removed.

It has been found that the addition of sugar, notwithstanding its advantages, is attended with very serious drawbacks. The paper prepared with it is too easily affected by damp or moisture—is so soluble as to run or flow when immersed in the bichromate bath, even at the temperature of ordinary summer heat. The solubility of the sugar causes it to dissolve out and contaminate the bath; and this occurring in different proportions at different times, according to the temperature, uniform results cannot be obtained.

Now the first part of my improvements consists in substituting for sugar a substance or substances which shall give flexibility to the tissue, shall be soluble in water, and which shall be insoluble in the sensitizing solution—that is, the solution of the bichromate or its analogue employed; and the best substances with which I am at present acquainted are the soluble soaps—that is to say, the stereates or oleates of the alkalies, and particularly soft soap, the oleate of potash. These substances, while possessing all the properties of the sugar for this purpose in an enhanced degree, are not only free from the objections to the use of that substance already referred to, but confer other qualities on the pigment compound which will be set forth below.

In carrying out my invention, I find that but a very small quantity of such soap in proportion to the gelatine used is required; for instance, to make a good pigment composition with which to coat paper which, after being coated, shall have the specified properties—viz., flexibility and infusibility in the bath at moderate temperatures—I take of gelatine 1 pound, water 4½ pounds, colouring matter a variable quantity according to its nature and properties, as will be well understood; but, for example, say lampblack 100 grains, soft soap 1 ounce. I dissolve the gelatine in the water, add the lampblack, previously ground, to an impalpable state of division, and then gradually add the soft soap, previously dissolved in distilled water. But these proportions may be greatly varied; for instance, one per cent. of soap has a material effect in diminishing the brittleness of the gelatine, while ten or fiteen per cent. may be added without serious detriment to the resulting compound. I prefer, however, to use the soap in the proportions stated

It it be desired to make the tissue sensitive at once to the above quantities of the pigment compound, add to the double chromate of potash and ammonia one ounce and a-half dissolved in the smallest quantity of water possible, to which a few drops of liquid ammonia have been added.

The compounds so formed, sensitive and insensitive respectively, may then be spread upon the paper in the usual way, as is well understood.

I claim, in the preparation of paper or other surfaces for the production or manufacture of pictures by photography, the use of a pigment compound formed with gelatine or its congeners, and a stereate or oleate of an alkali, substantially as described.

2. It has been usual to employ printers' ink and other pigments ground in oil for the production of photographic pictures, such pigments being mixed with bitumen or asphalte, or with tallow, soap, and other fatty bodies, with or without a bichromate; but in such cases the paper prepared with a pigment compound of this nature, after exposure to light, is treated with oil of turpentine, naphtha, or other solvent of fatty bodies. The original compound unacted upon by light is dissolved by this menstruum, while that upon which the light has acted has become insoluble, and remains behind, forming the picture.

Now I have found that instead of the compound of bitumen and other bodies above described as the sensitive vehicle or medium for fixing the printers' ink and other oily pigments, I may employ gelatine or its congeners, and bichromate of potash or other alkali, when the soluble soaps form a part of the compound as before described. In this case I have only to substitute a pigment ground in oil for that ground in water, the compound spread upon paper or other surface being exposed when dry to light, and treated with warm water to reveal the picture, as in the first case. The advantages of this substitution for the bitumen or such like matter are, greatly increased sensitiveness, and the possibility of the use of water instead of the inflammable and offensive volatile oil hitherto employed to reveal or develop the picture.

In carrying out this part of my invention, I merely substitute for the lampblack ground in water in the preceding mixture a relative quantity of the same or other pigment ground in oil; but I regrind such oily pigment with the soft soap and a little water, and add these gradually to the gelatine as before.

I claim, in the preparation of paper or other surfaces for the production or manufacture of pictures by photography, the use of a pigment compound formed of printers' ink or other oily pigment of gelatine or its congeners, and of a stearate or oleate of an alkali, substantially as described.

3. My third improvement consists in replacing the gelatine and its analogues in the above compounds wholly or in part by certain other organic compounds having the property of insolubility in warm water, but of solubility in some other chemical agent, such as ammonia or the alkalies or salts; and the best substances I am at present acquainted with are the proteine compounds which possess the specified properties, such as caseine, legumine, modified albumen, and their congeners.

A pigment compound so formed, and mixed with a bichromate, is sensitive to light; but the picture is not revealed or developed by hot water until a few drops of ammonia or other alkali possessing the like property have been added to the water.

In carrying out this part of my invention, I form a curd of skimmed milk, as in making cheese, by precipitating the caseine with rennet or by an acid. I collect the curd on a filter, and, after partially drying it by pressure, I dissolve the caseine or curd in dilute liquor ammonia. This solution—which should be as thick as the previously described solution of gelatine in four and a-half parts of water—I use instead of a portion of the gelatine solution; that is to say, I take away part of the gelatine solution, and substitute in lieu thereof an equal portion of the caseine solution. The quantity so substituted may be greatly varied. Ten per cent. of the caseine solution so substituted renders the resulting compound insoluble in water until a certain quantity of ammonia has been added, and twice or three times that quantity does not prevent a workable tissue compound being formed: and in making such a pigment compound I find it best to mix the caseine solution with that of the soap, and add the two together to the gelatine. Soap, however, is not absolutely necessary, as the caseine itself gives flexibility to the tissue, and thus supersedes the necessity of employing the soap.

I claim, in the preparation of paper or other surfaces for the production or manufacture of pictures by photography, the use of a pigment compound formed by substituting, wholly or partially, curd or caseine or such like organic substance, insoluble in warm water, but soluble in alkaline or saline solutions, for the gelatine, or for a part thereof, in the above pigment compounds.

In all the compounds above referred to, I prefer, in place of the ordinary soft soap of commerce, to use oleate of potash made by mixing the acid and alkali directly. I also use oleate of ammonia, and I find that all the soaps of commerce possess, in a greater or less degree, the like properties.

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Correspondence.

TUNICARE.

Dear Sir,—I can fully endorse all that has been said in favour of this application. It saves much trouble, prevents stains, prevents slipping of the film, and does not injure the bath. Moreover, it is as useful for dry plates as for wet.

To those who complain that it does not run smoothly, I would say, remove all grease from your plate, and pour on *quantum suf.* of tunicare. An inefficient quantity is sure to run in streaks, leaving islands of bare glass.

A weak solution of washing soda is better than acids for cleaning plates; it removes grease much more readily, and gets rid easily of the film and varnish on dry plates. Two or three hours' soaking, and then a swill with pure water from a tap, will make any plate, new or old, ready for the tunicare. Before the collodion is poured on, the plate should be made thoroughly dry. Some glass is very hygrometric, and dampness beneath the film promotes its separation.

By the way, can you tell me if tunicare will keep well, as a matter of certainty? Mine I have had now full three months, and it seems as good as ever. Are any precautions requisite?—I am, dear sir, yours faithfully, M. W. F.

PS.—An objection to acids for cleaning plates is, the danger of getting sundry red spots on your clothes. Professionals may entrust their plates to understrappers, but amateurs, as a rule, do all the work themselves.

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Proceedings of Societies.

Photographic Society of Marseilles.

A meeting of the Society was held on the 16th ult., M. Teisseire in the chair.

The Secretary communicated a letter from Dr. Van Monckhoven, in which that gentleman placed at the disposal of the Society some specimens of his newly discovered double iodizing salts.

M. Vidal exhibited an Albert-type print, of which it was observed that if a little more intensity and contrast could be imparted to the lights and shadows, the results would be far more perfect. These qualities would, however, doubtless be developed as the process progressed towards perfection.

The Secretary made known the fact that the manufacture of pigmented papers was now practised by many commercial houses in England; he had written to different makers for particulars, but had as yet received no reply to his communication. Printing in carbon was every day becoming more general, and it was a necessary element to the success of pigment printing that the fabrication of the tissue should be brought to the utmost perfection.

M. Vidal exhibited various specimens of carbon printing by M. Gobert's method, and narrated the particulars of various improvements he proposed making in the method.

M. Teisseire showed a fine collection of heliographs by the process of M. Amand Durand. The copies were, in some instances, superior even to the originals: and in one instance—a print of Claude Lorrain—the members were enabled to institute a comparison. The copies in this case were more vigorous and fresher than the engraving from which they had been produced.

The President also remarked that the prices at which these heliographs could be prepared was very small indeed.

M. Vidal stated that he had recently improved his photometer to such an extent that in good weather it registered every five seconds. This was done by adopting a recent suggestion of M. [illegible].

The President announced the end of the session, which had been marked by the completion of some very important work. The Society would meet again in the month of October.

The proceedings then terminated.

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Talk in the Studio.

Fast Painting.—Mr. Nathan Hughes, the "fastest painter of the age," has issued a challenge to all the artists in the world to paint a picture against time for £1,000 a side. It is announced that his challenge has been accepted by an American artist, and that he, as well as the challenger, have signed the preliminaries and deposited £1,000 in the Bank of England for the match, to come off on or about the 13th inst., in the saloon of the Palace Royal, Argyll Street, Oxford Circus. If rapidity of delineation be admitted as an important art element, photography may safely enter the lists, and the sun himself will certainly distance all competitors in this respect.

A Photographic Souvenir of Gad's Hill.—At the close of the sale of the effects of the late Charles Dickens at Gad's Hill Place, Mr. Ball, a gentleman who has been a large purchaser, requested Mr. Franklin Homan, the auctioneer, before putting up as the last lot the small table which he had before him during the sale, to consent to have his photograph taken with the table before him, as he had stood for four days ably and courteously conducting the sale of so many interesting souvenirs of the great novelist. Mr. Homan having consented, Mr. Ball at once bid ten pounds for the table, worth intrinsically as many shillings, and expressed his intention of having the best possible photograph taken as a souvenir of the event of the four preceding days.

International Exhibition of 1871.—We are requested by Her Majesty's Commissioners to state that there is no foundation for the rumour that the International Exhibition appointed for 1871 is to postponed by reason of the war. The first of the series of Annual International Exhibitions of Selected Works of Fine and Industrial Art and Scientific Inventions will take place next year, as already announced.

Suicide by Cyanide.—Two suicides by cyanide of potassium are announced during the week. A woman named Elizabeth Lyons committed suicide the other day by taking a quantity of cyanide of potassium. The deceased cohabited with a man named Bocok, a photographer, living in Regent Street, Liverpool, and in consequence of having a quarrel with him she went into his studio, where she took some of the chemical named, and before medical assistance could be obtained she had expired. Mr. P. Gaskell, engaged at the Horse Guards, entered a cab a few days ago to drive to Dr. Durham's. When he arrived he was found dead, having taken cyanide. The recent Medical Act does not seem to have imposed difficulties in the way of suicide by this deadly poison.

Photography and Ethnology.—Some standard photographs and directions for measurement have been received by the Colonial Office from the Ethnological Society, through Prof. Huxley, the president. These are intended for the measurement and descriptions of aborigines in our Colonies.—*Nature.*

Photographic Guides to Tourists.—The *Times*, in a notice of Mr. Vernon Heath's photographs, says:—"This year, when war has closed the Continent to tourists, our own islands have a chance of receiving something like the investigation and admiration they deserve. As a guide to the tourist, no less than as a provider of exact and exquisite souvenirs of the scenes he visits, the photographer can do excellent service; and among the photographers who have done most justice to English subjects—Bedford, Mudd, Robinson, and others—Vernon Heath holds a deservedly high rank. . . . Among the many services of photography, not the least will be its making us prize the beauties of our own island, both in the way of stately and interesting buildings, and beautiful combinations of wood and water, hill and valley, plain and mountain. And a visit to Mr. Hoath's studio will show how large a store of such wealth of nature and art is neglected by those who yearly take wing across the Channel, but who this year may have to stay at home."

Method for Cleaning Glass.—A correspondent of the *Bulletin* writes:—"Having read in the publications a great many ways to clean glass, I will send you a short and easy method that will give satisfaction, as I have used it for the past eight years. A dirty glass is not to be found in all the negatives I have made. First, soak glass in a solution of water, two quarts, and two ounces nitric acid C.P. Lay over night, or longer if you wish; wash under running water, and place in a solution of two quarts of water and two ounces cyanide of potassium; let remain over night, or as long as you please, and, when wanted, wash thoroughly under a stream of water, and place upon a rack to dry, when they are ready for use. The acid and water softens the dirt upon the glass; and, if washed after immersion in the acid alone and coated, the film is likely to slip upon the plate, or it will be difficult to wash the glass clear enough of the acid, but that it will soon show itself in the bath solution. The cyanide of potassium will neutralize the acid and obviate the objection to acid alone. Should you give the above a careful trial, I think your rags and rotten-stone, &c., would go out of the window."

Lead Pencil Working on Negatives.—A correspondent of the *Philadelphia Photographer* says: I find a very simple and good plan of giving a tooth to varnished negatives, for the purpose of retouching with a pencil, in applying rosin with the finger; pulverize the rosin very fine, and rub on the parts to be worked. Should there be an excess of pencilling, it can be softened by going over the surface again and re-working.

To Remove Silver Stains from the Fingers.—Wash the fingers with a solution of sulphate or chloride of zinc, made as saturated as possible, and slightly acidulated. While the fingers are in the solution, rub the blackest parts with a rod of zinc, to facilitate the reduction. After the stains have disappeared, rinse them in plain water, and then wash well with soap and water. By this plan the hands are made entirely clean, and no trace of poison left in the skin.—Abbe Fortin in *Les Mondes*.

A Printing Bath.—Mr A. Henderson, writing to the *Philadelphia Photographer*, says: "I see no end of plans to purify the printing bath from both sides of the Atlantic. Now I am not troubled with this more than perhaps three times in a year; my bath is always clear and works well, and it seems strange why other baths should not do so too. I use 50 grs. silver per oz., dissolve half in ammonia, and in making 20 oz. I take 15 water and 5 alcohol 95°, floating from 20 seconds to 40 seconds. If the bath gets dirty from carelessness in not adding silver, say an ounce for each quire, I use either Condie's fluid or the pure permanganate of potash, a few drops of a 10-grain solution, and filter; this will make a *red* bath clear in a very short time, and not injure it. The bath I now am using was first made in 1864, only renewed in bulk ever since. It *is such* a bother to have a dirty bath after every sensitizing."

To Correspondents.

G. Edmunds.—To make a collodion for enamelling, dissolve about five or six grains of pyroxyline giving a tough film in an ounce of equal parts of ether and alcohol. Liesegang's papyroxyline will generally answer well; a drop or two of castor oil added will be an improvement. 2. If a well-polished piece of plate-glass, perfectly well cleaned with acid and water, be used, no coating should be necessary to get the film to leave easily. A solution of wax in ether is an aid to the film leaving the glass, however, but if it be used—and, indeed, in any case—it is important not to dry the applied picture by artificial heat, and also, in applying the gelatine solution, to avoid using it too hot. The greatest cause of persistent adhesion is the use of imperfectly cleaned glasses. We have not used the lens you name.

J. P.—Avoidance of stains in producing developed prints is rather a matter of skill in manipulation than of formula; nevertheless, suitable formula may aid in preventing such defects. The use of a weak developer with a free proportion of acetic acid or a trace of a bromide will check rapidity of development, and so enable you to cover the paper without stains. In some cases it is desirable to slightly moisten the surface with distilled water before applying the developer, and this favours the rapid flow of the solution. 2. The use of cotton wool—or, better, of an improved brush—is convenient, both in spreading silver solutions and developer. Take a couple of strips of plate glass, and tie a piece of swan's down cotton between, leaving a little projecting. This makes a good brush for the purpose. 3. It is difficult to produce developed prints with the image entirely on the surface; as a rule, it is more or less sunken. The best aid to keeping the image on the surface is the use of a hard-surfaced drawing-paper, salting with a solution containing gelatine, and taking care to keep the salting solution on the surface. 4. It is difficult to obtain earthenware dishes as large as 24 by 20. Probably your dealer will get them for you, however, as we believe that they are made at the potteries, by Edwards and Son, of Burslem. A light dish of wood, well varnished, answers well.

James Sims.—Several causes might have produced the yellowness in your prints; but the most likely cause is the use of an acid hypo bath, or placing the prints in the hypo direct from an acid toning bath.

T. L.—We have seen Mr. Solomon's enlarging apparatus in use, and have seen the work done by it, and have no doubt of its efficiency. We have not seen enlargements of 36 by 30 produced by it, but see no reason to doubt its suitability for that size. 2. Ivory can be prepared for floating on the silver bath; but it requires care. You will find instructions in the series of articles on printing on ivory in our last volume. If collodio-chloride of silver be employed, a powdery sample of collodion should be used, which will not peel. 3. For enlarging on canvas direct there are several formulæ, but, probably, none better than that described by Mr. Davies in our last Volume. It is also described in our last Year-Book.

S. W. Barnes.—For producing magic lantern slides a good, sharp, clean, detailed negative, suitable for ordinary work, will answer well, but it is better rather thin than dense. 2. The development is carried on somewhat in the same manner as negative development, but it should not be carried so far, as it is most important to have no deposit in the lights or transparent parts. 3. It is better blackened, but not re-developed, as piling up silver tends to make the image coarse and granular, a defect which shows when the image is enlarged. A weak solution of bichloride of mercury followed by sulphide of ammonium answers well. The Year-Book for 1864 contains an article on the subject, and also the Year-Book for 1869. We do not know anyone who produces transparencies for the trade.

James Bennet.—Blue eyes are generally a little more difficult to manage satisfactorily than dark ones; but with proper treatment you may secure good effects with either. The primary fault in the portrait you enclose is in the lighting. A full, direct front light very rarely gives a pleasing portrait. Allow the light to reach the face chiefly from one side, and take care that the blue eyes look into the shaded part of the room. In all cases take care to protect light eyes from a strong light.

B. F. M.—The addition of a trace of carbolic acid to paste or gelatine solution will tend to arrest decomposition. If the gum be made with boiling water it will have less tendency to ferment. A few drops of oil of cloves also tends to prevent putrefaction. On the whole, perhaps, nothing is more convenient and efficient than freshly made paste starch. The extremely high glaze of which you speak is obtained by using heat as well as pressure. A high glaze is, we think, permissible in small pictures like card portraits, as it tends to give value to fine detail; but we prefer a matt surface for large pictures.

G. D.—A portrait lens stopped down will answer well for copying. The stop in front will answer best.

Thomas L.—You can obtain enamel tablets and all other requisites of Mr. Solomon, Red Lion Square. He will also supply you with a muffle and furnace.

X. Y. Z.—Photographically, your pictures are good. They are brilliant, well defined, well modelled, and of good tone. But there is a sad lack of good taste in the accessories. The strongly marked tessellated pavement and its impossible perspective the balustrade, and mountains beyond, do not furnish a suitable entourage for a lady in evening dress, nor for the clergyman in his gown. A quietly painted interior or plain background would have been much better. Indeed, unless a scenic background is very perfect indeed, it is better to use a plain background, even if you employ the conventional curtain, &c., to fill up.

Ennel, J. Andrews, and T. H. Redin.—Your communications have been duly despatched.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
New Pigmented Papers for Carbon Printing 397
The Woodbury and Lichtdruck Processes Compared. By H. Baden Pritchard 398
On Retouching Negatives. By J. Grasshoff 399
Photographic Rambles in South Wales. By Thos. Gulliver..... 399
A German Estimate of Photography in America 400
Preliminary Coating with Albumen in the Wet Process. By J. Grasshoff 401
Acceleration of Exposures By M. Carey Lea..... 402
PAGE
Weighing and Measuring. By M. Carey Lea 402
Exhibition at Cardiff..... 403
The War and Popular Card Portraits 404
Suggestions on Posing. By W. H. Kent 404
Recent Patents 405
Correspondence.—Photographs by Moonlight—Tunicare 407
Talk in the Studio 408
To Correspondents..... 408

NEW PIGMENTED PAPERS FOR CARBON PRINTING.

The progress of improvement in carbon printing, and in materials for carbon printing, proceeds more rapidly than the popularization or general practice of this branch of the art. Although the means of securing permanent impressions have, as yet, been comparatively little adopted by photographers generally, improvement in the methods and materials steadily progresses. Last year a mode of working was introduced by Mr. J. R. Johnson, which very materially facilitated the operations, and reduced the extent of the necessary appliances and of the cost of the operations. At the commencement of this year Mr. Johnson patented some important improvement in the pigmented paper employed in producing the prints. The specification of these improvements being now accessible, we lay the details before our readers on another page.

The improvements in question are of a three-fold character. First, an improvement is made in the ordinary carbon "tissue," the result of which is that it is more sensitive; that it will remain sensitive a longer time without becoming insoluble; that it may be rendered sensitive in very hot weather without risk of the gelatine becoming dissolved, so as to either contaminate the chromic solution, or to cause the surface to run and become uneven; and it may be dried by heat after sensitizing without causing the gelatine to run. The second improvement consists in the preparation of a "tissue" in which the pigment or colouring matter consists of printer's ink, oil paint, or similar fatty body, but permitting development by means of water instead of benzole, turpentine, &c., as in Pouncy's process. The third improvement consists in the production of a tissue in which gelatine is discarded, and a body much less soluble employed, and requiring for its solution in development an alkaline solution instead of merely warm water. By this modification the facilities for working the carbon process in hot climates are materially increased.

The agent involved in carrying into effect the first two improvements is soap—the oleate of potash, or soft soap, being especially suitable. This is mixed with the gelatine and pigment used in preparing the tissue, and by its peculiar action permits a variety of valuable ends to be gained. Before pointing these out, we may briefly point out, in passing, the fact that saponaceous bodies have repeatedly been employed or suggested for use in various photographic operations. Silver soap, or oleate of silver, has been suggested as an aid in securing a photographic printing image on a lithographic stone, and we have employed it in collodio-chloride of silver. In 1863 we suggested to Mr. Pouncy the use of soap as a means of combining a chromate with a fatty ink and bitumen in his printing-ink process then just patented. Some years ago Mr. Davis employed the same substance in preparing a photographic transfer for photo-lithography; and some other uses of saponaceous bodies in photography have been suggested. The singularly practical and ingenious use which has been made of soap by Mr. Johnson in his recent improvements was a very natural consequence of his especial experience, altogether apart from any other suggestion on the subject. It has so happened that much of his technical education and subsequent practical experience have had essential connection with the chemistry of the fatty bodies. He had the privilege, many years ago, to attend the lectures, in Paris, of M. Chevreul, on the *corps gras*, a subject of which, until the French chemist made his discoveries, comparatively little was known. Soon afterwards Mr. Johnson invented a saponaceous compound for lubricating purposes, which materially aided in making the working of the atmospheric railway possible. The well-known patent railway grease used so largely for reducing friction in railway rolling stock was also the invention of Mr. Johnson. It was not unnatural, then, that the possibility of using a soap in the course of his carbon experiments should occur to one so familiar with the various physical properties of the class of bodies to which it belongs.

By the introduction of oleate of potash into carbon printing, several most important advantages are gained. When gelatine alone is used in preparing the pigmented paper, it is found to be too hard and brittle when dry. In order to secure flexibility, it has been customary to add a certain proportion of sugar to the gelatine. From its extreme solubility, the sugar had a tendency to dissolve out during sensitizing, and contaminate the bichromate solution. The substitution of soap obviates this trouble. In warm weather the gelatine itself had a tendency to dissolve in the sensitizing bath, and also to run during the process of drying. Heat could not be employed in drying the tissue, because heat and moisture dissolve gelatine. But by the introduction of soap this tendency is checked; and no solution takes place, either in hot weather, or when the sensitized tissue is dried by heat. And, finally, whilst the sensitiveness is increased, the tendency to spontaneous insolubility is considerably reduced. The increase in sensitiveness is a very remarkable feature of the addition of soap to the gelatine, under some circumstances augmenting the rapidity of printing in an enormous degree. This quality is kept, however, within the limits of convenient working in the tissue prepared for general use.

The improvements effected in the ordinary "tissue" by the introduction of soap are of a very practical kind, and must tend materially to popularize carbon printing, since they especially tend to make the operations more easy and certain. These improvements are not mere suggestions or ideas: they have passed out of the domain of experiment into that of accomplished facts, and the improved tissue is a regular article of manufacture by the Autotype Company. The remaining two improvements, whilst definitely tested and proved, have not, as yet, passed into the region of general practice. We said, at the outset, that the progress of improvement in carbon printing was fast outstripping the practice of this branch of the art, and one at least of the remaining improvements presents an immense unworked field in pigment printing. The production of photographs in printer's ink or oil paint has often been suggested as, for many purposes, a desirable end. In 1863, Mr. Pouncy patented an ingenious process for the purpose, which, at the time, gave much promise, but which, from a variety of causes, has never come into important practical use. Amongst the causes which have tended to militate against its popularity, the long exposures necessary, and the costliness and discomfort of developing by means of turpentine or benzole, have been prominent objections. Mr. Johnson's specification describes a method of producing images in printing ink and similar bodies, whereby both the objections are removed. Discarding bitumen as the sensitive agent, Mr. Johnson contrives, by means of soap as a combining agent, to form a sensitive film of a fatty ink, gelatine, and bichromate. This is as sensitive to light as the ordinary carbon "tissue," and, like it, can be developed after exposure by means of warm water, instead of benzole or turpentine. Where pictures are required in a fatty ink, it will be seen that an immense advantage is gained by this method of working.

The third improvement in the specification will probably possess especial interest for those who desire to work the carbon process in hot climates. It consists in substituting for the gelatine in the "tissue," wholly or in part, bodies of the character of caseine. The especial gain secured by this substitution is of a similar character to that obtained by the addition of soap to the ordinary tissue. Unlike gelatine, the caseine, and bodies of its class, will not dissolve in hot water, but will require the addition of an alkali to the hot water used in development before the unaltered portion will dissolve and reveal the picture. "Tissue" prepared with such a body will not, when sensitized, dissolve and run in warm weather. It is also more flexible than gelatine, and the texture is of a superior character. It appears that ten per cent. of caseine added to the gelatine solution used in preparing pigmented paper is sufficient to render it insoluble in warm water, by which means the ordinary trouble of a tendency to dissolve and run in warm weather is got rid of, whilst, when the time for development arrives, it is effected at once by the addition of a little ammonia to the warm water. As yet, however, the various possible advantages of the third improvement have not been fully worked out.

The first improvement, which is already adopted in the ordinary practice of carbon printing, is of the greatest immediate importance, as getting rid of actual troubles, and gaining appreciable advantages; the second presents a field for work which will probably well repay working; whilst the third, offering some present advantages, may contain possibilities yet to be developed.

THE WOODBURY AND LICHTDRUCK PROCESSES COMPARED.

BY H. BADEN PRITCHARD.

The moment has, we think, arrived when a tolerable judgment may be formed of the merits of the two mechanical printing processes which are just now vigorously contending for public favour. Both the Woodbury and Lichtdruck methods have been for some time before us, and their capacities demonstrated by frequent examples in this and foreign photographic journals; and although exception might be taken to the fact that the Woodburytype is of much earlier date, and therefore more elaborated, than its formidable rival, still we must remember that the latter is but a modification—a very important one, if you will, but still only a modification—of Tessie du Motay's earlier photo-lithographic process.

By the Lichtdruck process we do not merely mean that of M. Albert alone—to whom is due very great credit for the patient and clever manner in which he has developed a practical and commercial art from principles hitherto imperfectly digested—but we embrace under the name all processes based upon the application of the ink roller to the insolated gelatine film. Thus the Albert-type, the Gemoser Lichtdruck, the Obernetter method, as likewise the recently announced Rye process, may all be strictly classed under one head, being founded, every one of them, upon identical photographic reactions, although possibly differing from one another in some of the minor details. The Albert-type, for instance, is said to differ from the Gemoser method merely in the character of the plate glass which is used: the surface of the latter being, in the one instance, polished, and in the other ground; while other methods vary, again, in the composition of the second or upper sensitive coating, into which enter a large number of heterogeneous materials, no doubt more or less useful. All the methods have, however, been designed with a view of securing as perfect a lithographic surface as possible, and capable of yielding uniform and well-graduated results; and, in our opinion, the most successful examples thus obtained have been those secured by M. Albert.

The Lichtdruck may be denominated a purely lithographic process, being dissimilar in all respects to Woodburytype, which is, as clearly, an engraving method; for, in the former instance, the printing-block is a flat, even surface; while in the latter, the plate, like a metal engraving, is covered with minute depressions of unequal depth. This is a most striking and important point of difference, and one which must greatly influence the commercial applications of the two methods, and confine them, possibly, to very different spheres of labour.

We will, in the first instance, consider the advantages of the Lichtdruck process; and, as examples of its capabilities, we may instance the fine specimens now exhibiting at the Paris Photographic Exhibition. One of these pictures—a copy of an engraving of the "Pardubitz Hunt"—is really a wonderful production, measuring, apparently, upwards of two feet in length. From a fair distance this specimen appears very perfect, and only when pressed for severe criticism should we complain of a lack of intensity and vigour in the shadows. Other reproductions of equal merit, although of inferior size, are shown; and certainly, if we except the little deficiency above mentioned, nothing more successful could be desired. When, however, we pass from reproductions to views direct from nature, and more especially landscapes, the suspicion we previously entertained is confirmed with some distinctness. A portico with festooned shrubs, flowers, and foliage is perhaps the best of the landscapes, the delicacy of the picture being marvellous; but a sad want of contrast, unfortunately, causes the more softened details of the picture to appear flat and weak, and thus to injure the effect considerably. The exterior and interior architectural views shown are a trifle better than the landscapes in this respect, but vigour and contrast are certainly wanting in all the specimens.

We see, therefore, in the first place, that in regard to Lichtdruck there is no difficulty, evidently, in preparing blocks of large size and printing off proofs therefrom; and that when such pictures are reproductions from engravings, drawings, and the like, the copies are executed with exceeding fidelity. Moreover, the method of preparing the Lichtdruck printing surfaces—namely, by applying a double sensitive coating of gelatine to a sheet of plate glass, and, after printing, to use the surface exactly in the same manner as a lithographic stone—is said to be both simple and inexpensive; and, indeed, this certainly must be the case when we take into consideration the multitude of specimens which have lately been scattered broadcast by the inventors. Their is, however, the lack of vigour or contrast exhibited by some descriptions of Albert-type prints to be considered, and the question at once naturally arises, whether this weakness is inherent to the process. We know, of course, that lithography has been brought to such perfection that in specimens of high-class workmanship some difficulty is not unfrequently experienced in distinguishing lithographs from fine wood engravings, so nearly do the former approach in quality to the latter. Nevertheless, it is only with very delicate wood-cuts that any doubt can arise in the matter; and in such pictures vigour is often sacrificed at the expense of softness. Thus we can scarcely come to any other conclusion than that Lichtdruck, being essentially a lithographic process, is incapable of yielding results superior in character to those exhibited by the finer quality of lithographs.

As before stated, we have in Woodburytype a pure engraving process; and, judging from recent specimens we have seen produced in London during the last few days, there can be no doubt that as fine results are obtainable from a photo-relief as from the most delicately wrought copper engraving. Reproductions from pictures, as likewise direct portraits from nature, are now obtainable, not only possessed of all the original detail and beauty, but endowed with a brilliancy and evenness of surface of extraordinary perfection. Indeed, the reduced copies sometimes outrival the originals in finish when the latter are in some degree worn and faded; for the sharpness obtained by reproducing on a smaller scale, and the employment of an ink similar in tone to the fresher portions of the drawing or cartoon, are very valuable means of improvement.

In the character of Woodbury prints there appears to us at present but very little room for amelioration, and it remains now to be seen whether the well-known obstacles connected with the process can be overcome. The most difficult of these is the size of the plate, and that this is gradually being reduced no one can deny. Pictures measuring ten inches by twelve, if not larger, are now produced with ease and certainty, and M. Braun, of Dornach, a very recent disciple of Woodburytype, lately expressed a decided opinion that plates of large dimensions could, without doubt, be prepared, if large demands for such expensive prints were forthcoming. Until such supplies are asked for, however, he should remain satisfied, and confine himself to executing the orders he received for those of lesser dimensions. That prints up to twenty inches might possibly be produced without any insurmountable difficulty, there can be no reason to doubt; but in the preparation of plates above that size, the pressure required for imparting to a metal surface the form of the gelatine matrix would be so exceedingly great, and the cost of a hydraulic machine of the requisite strength, and furnished with plates of mathematical accuracy, so very heavy, that the finished prints would be costly specimens indeed. Another consideration in the photo-relief process appears to be the preparation of the plates; this is necessarily a time-taking and delicate operation to perform, many of the manipulations being such as only a practised hand can fulfil; but whether it is more or less laborious than the production of Lichtdruck blocks is a question which we are, unfortunately, not in a position to determine.

The two processes appear to us capable of different applications, and not liable to clash in any way with one another. On the side of Lichtdruck is the element of cheapness and the feasibility of producing copies of any dimensions, qualifications which cannot fail to secure extensive employment for it in certain channels; Woodburytype prints, on the other hand, while somewhat more costly to prepare, are as superior to Albert prints as engravings are to lithographs, and although there are some instances in which a lithograph of a subject is as good as, or even more valuable than, a picture of another character, still, as a rule, photo-relief prints will usually be preferred, by reason of their perfect tone, vigour, and truth.

ON RETOUCHING NEGATIVES.

BY J. GRASSHOFF.

In one of the last numbers of the *Photographische Mittheilungen* a photographer of North Francia told us, by a letter, that retouching with the lead-pencil on common negative varnish had been dissolved by warming the plate, and thus vanished. Principally this had happened when using the Grossberger and Kurz lead-pencils, but not so when using the Faber's, &c. This cause attracted my attention; nothing of that kind till now had happened to me. Most of my plates I first coat with amber varnish (on which all retouching is done); then I pour over it a common negative varnish that always requires warming; and thus it would be a very disagreeable thing for me to see all the painfully done retouching dissolved and vanished.

Mr. Schwanhauser, possessor of the Grossberger and Kurz fabric in Nuonberg, sent me, on my demand, various sorts of his lead-pencils. I have carefully tried them all, and the results were very satisfactory, but in no case has it been dissolved. At present I work with the new "Cornelius Stift" of Grossberger and Kurz, and I have in use six various numbers of them. For plates, the varnish layer of which has not been matted—that is, ground rough—I take the numbers, BB, B, HB; for matted varnishes, HH, HHHH, or HHHHHH, according to the intensity of retouching required. On amber varnish I work only with the two softest sorts. These Cornelius pencils are quite as good and as fine as the Faber Siberia pencils, and have the additional advantage of being much cheaper.

On this occasion I will describe to you my manner of covering backgrounds, &c., on the glass side of the negative, in order to have them somewhat lighter in the print. Lead colour is mixed with a weak solution of arabic gum or of dextrine (perhaps 1 : 8); then, with the point of the finger, I tip this colour on the plate (glass side) where I intend to have a light layer of it. While tipping I always breathe against the plate, in order to keep the colour moist, and thus I am able to obtain the layer most equal. This must be continued until the layer has the required intensity. In a few seconds all is dried, and then, with a very soft lead-pencil, this layer may be still more intensified and equalized if required, as well the whole of it as, perhaps, particular spots. Other parts may be taken away by a fine, wet brush. Also you may scratch it off with the point of the rasing-knife. All is done on the glass side of the plate.

To protect the plates prepared in this manner I simply coat them with negative varnish which contains no water (that, besides, is not the case with the common negative varnishes, because they would dissolve the collodion); I let this varnish dry without warming, which, when containing any water, would not be advisable, because it would then become opal. The varnish for this purpose I have in a bottle with wide opening; the brush for coating the plate with varnish is sticking in the cork inwards, and always dipping in the varnish. Thus the brush never can become hard by drying.

PHOTOGRAPHIC RAMBLES IN SOUTH WALES.

No. 5.

BY THOMAS GULLIVER.

Vale of Neath.

This is one of the most attractive spots in South Wales, and not very difficult of access by means of the Vale of Neath Railway, the Swansea station of which is at the bottom of Wind Street.

The first object of attraction is the ruins of Neath Abbey, about one mile from Neath, and seven miles from Swansea. The Neath Abbey station is within two hundred yards of the ruins, which are very extensive, and will find employment for the camera-man for best part of the day. Returning to the station, and taking the road towards Neath, the visitor will see a narrow road to the left up a slight hill;

this will lead him to a pretty waterfall, but as it is situated near a forge, an ugly jointed iron pipe crosses the stream, and rather destroys its appearance. Several sketches and views may be made in this little valley. Having done these, we will regain the main road, and, as the distance is but short, jog on to Neath, a small clean town on the banks of a river, but possessing but little to attract or detain the tourist.

The next place of note on our way is Aberdulais, distant from Neath two miles. There is a station here; but I should advise walking, and we pass through the village of Cadoxton, where there is a handsome church, with finely-proportioned spire. In the grave-yard is a large gravestone, about seven feet high, erected to the memory of a fair young girl who, in a most mysterious manner, was murdered on the bank of the adjoining river, and whose murderer was never brought to justice.

At Aberdulais we shall find many points of interest. The village itself is nicely situated for a picture; and near the forge is the Aberdulais Fall. The river here falls over a mass of strange and oddly-shaped rocks and cliffs draped in festoons of foliage, which, in calm weather, give great effect to a fine series of pictures. On the right of the village is the Aberdulais Tin Works, where, night and day, is an incessant activity in rolling, cutting, and stamping the iron intended for tinning and finishing what is known as sheet tin.

Leaving Aberdulais, we take train to Resolven, four miles further on, and, within a mile, we come to the beautiful Fall of the Melingcwrt or Melingcourt. The best view of the fall is on the right hand. The stream of water in summer time is very small, but, after rain, it is one of the finest in the valley. The water falls a depth of about seventy feet, and is a beautiful subject in sunlight. Above the falls are some curious rapids, crossed by a rude wooden bridge—an excellent bit for a stereoscopic view.

Our next station is Glyn-Neath, about four miles from Resolven. From Glyn-Neath to Pont-Neath-Vaughan is five miles. Here we have a few nice views, and a good resting place at the Angel Inn, which is also the Post Office. The landlord is well acquainted with the locality, and able to direct the wandering tourist where to go. Bearing somewhat to the left is a road leading to the Dinas Rock, or Craig-y-Dinos, half-a-mile from Pont-Neath-Vaughan. Here is a double bridge, a beautiful fern-covered Cwm, and a variety of objects of interest. These having been attended to, we take a narrow and steep road by the side of the Dinas Rock, and, by keeping near the river, we pass the Powder Mills of Messrs. Curtis and Harvey. Near these is a path leading to the Clyngwn Falls, but we do not visit those on the present occasion, but keep to the right-hand for about a mile. We then arrive at the Falls of the Upper Cylhepste, one of the finest falls in the Vale of Neath. The water falls over in three streams between forty and fifty feet deep, but after rain it comes over in one broad stream about thirty feet wide. There is a pathway underneath the fall, and is, in fact, the only road to the Lower Cylhepste, except wading through the river. I have, on many visits to this fall, passed under without getting more than a dozen drops of water on my jacket. The path is slippery; but, with ordinary care, there is no danger.

Taking the path on the other side of the river for about a quarter of a mile or less, we come to the Lower Cylhepste, a small but very pretty view, with plenty of shady spots to pitch the tent and refresh the inner man. A short distance below this fall is a ford where one can easily cross in summer time. This I have done to save the distance in returning to Pont-Neath-Vaughan. The caves at Porth-y-Ogof and Ystradvelte are higher up the valley, but I have not been there, so cannot say anything about them.

We will now suppose our return to Pont-Neath-Vaughan, and prepared to start for the falls on the Scurydd.

A GERMAN ESTIMATE OF PHOTOGRAPHY IN AMERICA.[*]

Chicago, 13*th June*, 1870.

The Rembrandt style, as well as the name of it, has been invented in America, and therefore we cannot wonder that it has been much cultivated here. Many photographers work in this style. Baker, of Buffalo, whose works are already presented to the Berlin Union, offered the public an original comparative composition of genuine and imitated Salomons, Rembrandts, and, among them, one by Lœscher and Petsch. Landy, a photographer at Cincinnati, instead of the unbroken, deep-black background, applies another one, which is black on the shadow-side of the person, but lighter on the light side. This manner is known in connection with the vivid Rembrandt lighting; it makes a tolerably good effect, but the contrasts of the tone are too great. The effects which our countryman Scholten produces at St. Louis are much more tender; he is also the only one who has exposed some finely-painted enamels (Obernetter's manner).

A subject of importance in America is found in the enlargements and the painted pictures. By the want of good oil-painters the public is driven to this manner, and, luckily, there is no want of sunlight here to make enlargements to any extent. From this there are photographers here that have gained a great deal of practice in this style, and I have seen enlargements on albuminized paper which were as if directly taken from the originals. The best in this article was done by Moore, in Philadelphia. I had an opportunity of seeing his establishment. There were eighteen cameras for enlargement ready for working, all on wheels, in a kind of barrack; the apparatus consists of large boxes, in the interior of which the lens for the enlargement and the sensitive paper were adapted; the sunbeams were directly caught by a lens in the fore part of the box, and concentrated on the negative. Naturally, Mr. Moore works only *en gros*, and at prices which are extremely cheap. He takes a picture of the size of a whole sheet for $2½. I was much astonished at a work of his. This was a gigantic human head of (say) *three feet* in height. Five years ago my friend Jacobsen and I dreamed in our fancies of the future atelier of cyclopo-photographs. Here I saw the realization of our fantasies. Naturally, not every photographer has such apparatus, and thus many of them help themselves by indirect enlargements. They first make a positive, from this an enlarged negative, after which they print. Good proofs in this style were exhibited by Cole, Pessia, of Illinois. These pictures are often worked out in crayon manner, which produces a very good effect. The really painted pictures of this kind, however, would only partially satisfy the German taste.

Landscape views were only scarcely represented, though this kind of photography is managed in America as much as, or even still more than, in Germany. America has beautiful scenery, that is not second to our Hatz, Thueringen Forest, or Rhine-landscapes. Besides this, the grand streams, rivers, and cataracts, and recently the wonders of the far West, the Pacific railway with its admirable buildings, the forests and the prairies, the gigantic trees of California, and the colossal rocks of the Yosemite Valley. What a matter for the landscape photographer! And the Americans are not idle. The 2,000 miles Pacific Railway, with all its wonders, in big collections in stereoscopic size, is to be found in all printsellers' shops. What an instructive and interesting material for schools! In Germany, unfortunately, but little use is made of these photographic aids for instruction in geography. I scarcely need to say, that such natural wonders as the Niagara Cataract are reproduced by photography in a grand manner. Mr. Bierstadt, a German, has produced really excellent pictures in the stereoscopic size: natural clouds, with brillian light effects in air and water—truly photographic Hildebrandts. In America landscape views are practically adopted as guides for railways. Sometimes four to six lines, with few miles difference and equal prices (travelling by railway is extremely cheap here). conduct to the same place. Immense announcements in beautifully coloured lithography praise to the traveller all the advantages of every line; and besides this, to make his mouth to water still more. the photographs of the finest countries, and the most beautiful aspects, which are touched by the railway, are exhibited—even photographs of the railway-waggons, with their luxurious saloons, sleeping-cabins, and divans, so that the traveller knows what he is to meet with; and, truly, these photographs do not promise too much. In all cases they will better represent the reality than the best wood-cut.

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[*] Continued from p. 393.

The fine photographs of the Yosemite Valley, by Watkins, which were at the Exposition, I had already seen at Paris. The most interesting in the landscape style was exposed by Mr. Black, of Boston; it was a series of views of Greenland. The most grotesque rock formations, the ice mountains, descending to the surface of the sea, the gigantic masses of ice which go off from them, and are driven by the streaming of the water to the south in the most grotesque shapes; the huts of the Eskimos, genre pictures from the life of the natives, even sleeping white bears (not stuffed ones), all was instructive and pictorial too. There was a very interesting view of a landscape taken by the light of the midnight-sun. The sun himself was visible, deeply on the horizon; the visible effects produced by the reflexes of light in the lenses which surrounded the sun proved that all was genuine.

To make this fine collection still more interesting, Mr. Black had taken glass-positives from them, and showed them every evening by the magic lantern, with electric light; this was a very agreeable addition to the exposition, and attracted a great number of persons.

Here the glass-positive and the magic lantern, with electric or similar light, has been a very important aid to instruction. At Philadelphia, I was present at a lecture by Prof. Morton, who, by aid of a magic lantern, with lime light, explicated not only microscopic objects, but even drawing of machines. For this purpose he uses wood-cuts, printed on gelatine, which, enlarged twenty to forty times, are very much more intuitive and instructive than our drawings of machines, used for information, which, truly, often are more than bad. It is a pity that such means for instruction in our own country have not yet attracted any attention. In Germany they invent very fine theories, but the Americans make the practical application of them. of them.

A speciality in America are the Ambrotypes and the Ferrotypes—collodion positives—not only in the size of carte-de-visite, but also from eight to ten inches. In our country these grey pictures are nearly forgotten, but here they are still made, by reason of being so quickly finished. You need not wait for days for the picture; in half-an-hour all is done. That is a great advantage in a country where time is money, and where a great many people must often go a hundred miles and more to find a photographer. Even Daguerreotypes, in America, are still desired, and I found a German, engaged by Bogardus, at New York, only for this purpose. The other operators did not understand this old art. A particularly interesting picture of this kind from the good old time was a Daguerreotype, twenty years old, a panoramic view of Cincinnati, in five plates, each nine inches long, by Mr. Porter.

More important than all these old processes, I consider the new ones to be, which, likewise, were represented in the exposition; I mean the Albert and the Woodbury process. Both of them, very completely, were exhibited, and the Woodbury printing process practically shown by Mr. Carbutt, of Chicago, who has bought this process. The printing is done now by a very simple iron press. The metal relief is put on a horizontal base, then some warm gelatine-colour poured over it, a piece of well-smoothed paper put on it, and the cover shut by a bolt. The superfluous gelatine is pressed out and gathered in the space which surrounds the metal cliche. After a short time the warm gelatine colour becomes torpid, and then the paper with the picture can be taken off. The cover on its lower side has a plate glass. Mr. Carbutt is to go to Philadelphia to carry out this process *en gros*. Naturally, his first object is the production of masses and copyright articles, for which this process, in fact, is very important. In America, photography is so very much applied for trade, industry, art, and science, that he will always have plenty to do. For the business in detail in cartes-de-visite this process naturally is not practical. I saw beautiful plates of ten inches, which surely is very large. The chief difficulty of producing such large plates is not the printing, but the strong pressure for making the *cliche*. This requires a large hydraulic press.

Surely these Woodbury pictures are more similar to silver prints than any other manner of new printing. In one branch they have completely surpassed silver; that is, in producing transparencies. These are superior in tenderness of modulation, fine details, deepness and brilliance of tone; they even surpass the common glass positive in durableness and brilliancy and variety of the tone, and thus is found a means to produce the beautiful glass stereoscopes at a lower price, which will be very advantageous for their propagation. Mr. Carbutt, however, is not willing to accept scholars, as other contrivers of new processes do.

Albert's pictures came to the exposition only just before the close They were proofs which also have been seen at Berlin; they attracted much attention. Methinks, however that the Americans, till now, have not taken enough notice of it to judge of it clearly. Among Albert's agents, till now, there is none that practically works in this process.

Photo-lithography was represented only by MM. Burchardt Brothers, of Berlin.

As to new negative processes, the Tea dry process, by Newton, of New York, attracted attention. His plates are as fine as wet ones. Prints of them are to be found in the March or April issue of the *Philadelphia Photographer*. Lea's exquisite collodio-bromide pictures even surpassed them in some respects, and his process, surely, will have great success as soon as all the variations made with it shall be finished and all settled.

As to the particularly interesting examples of apparatus at the exhibition, I shall report of them on another occasion.

Your friend, Dr. H. Vogel.

PRELIMINARY COATING WITH ALBUMEN IN THE WET PROCESS.

BY J. GRASSHOFF.

The white of an egg, as fresh as possible, is mixed with nearly an equal measure of distilled water; then add four to five drops of ammonia, and shake till all has become a stiff foam; the pot in which it is contained is now covered with some layers of paper and a glass plate, that the ammonia may not evaporate. The albumen thus prepared is allowed twelve or eighteen hours to set down; then the clear, upper part is poured off into a bottle, well corked; and it may be kept in a good state from three to five weeks, according to the temperature. An egg gives 45 to 50 grammes of albumen and more. Take 200 grammes of distilled water, 12 grammes of prepared albumen as above described, and 1·5 grammes of iodide of ammonium; mix all well by shaking, and filter, but in such a manner that bubbles are avoided; that is done by bringing the under point of the filtering-funnel in contact with the inward side of the glass into which the filtered fluid is passing, or by bringing a glass stick into the point of the funnel, or in contact with it, reaching to the bottom of the vessel, that the filtered fluid may pass along it. The plates, as usual, are put into acids, then several times washed with clear water, and at last brought under a tap to rinse. If you like you may, after this, put the plates into a dish with distilled water; take them out, and let the water as equally as possible run off. Now let the plate drip off, and, when it is nearly dry, pour the filtered diluted albumen over it, like coating with collodion, until the outside of the plate is everywhere equally coated with albumen. The superfluous albumen you let run into the filtering-funnel, and it always remains clear for further use.

The plates are now put upright to dry, all sides being in contact with the open air. If the drying-room is warm, the plates are dry and fit for use within half an hour; if it is cold, naturally it requires more time.

Plates thus prepared and put into a plate-box will keep for eight days. After this time you have the same good results from them as from the fresh ones.

These plates, when taken for use, require no cleaning; they are only swept off with a brush, and then coated with collodion. The nitrate bath is much less improved by them than by plates cleaned in the usual manner. The collodion will never tear or peel off from the plate at any manipulation of the negative process, which otherwise often is the case when using old plates. Some plates—particularly old ones—after being developed, appear impure or fogged, which is caused by a kind of sediment or oxide between the plate and the film. After drying, the film appears blistered and partially gone off from the glass. All this is avoided by this albumen process. At first sight this process appears circumstantial and troublesome, but this is not at all the case. It has so many advantages that I can only recommend it to everybody. Since April this year I have worked with it to my great satisfaction.

The above described quantity is sufficient for sixty or eighty carte-de-visite plates. From time to time the filter must be removed, and the diluted solution prepared every week. In hot summers or hot climates I would advise you to prepare even fresh white of egg, which is not at all troublesome. To every photographer who knows the trouble of cleaning old plates this process will be welcome.

If fog, dirty spots, prints, pinholes, &c., appear, all the chemicals being in good order and working well, then it is a sign that the albumen is too old and spoilt. In this case prepare a fresh solution, and all these faults are seen no more.

ACCELERATION OF EXPOSURES.

BY M. CAREY LEA.*

An interesting communication lately made to the French Photographic Society by M. Bazin has led me to make some experiments which promise valuable results to both those who use the wet and the dry processes.

M. Bazin proposes to reduce exposures by placing cells in the camera front containing a red liquid, and, by thus admitting red light to the film, affirms that he considerably reduces his time of exposure, and gains detail in the shadows. The cells, four in number, contain a solution of carmine in ammonia, and are regulated by diaphragms.

The principle on which this proceeding is founded is not new, but will be found explained in Becquerel's *La Lumiere* (vol. ii., pp. 77, 78). The less refrangible rays—red and yellow—whilst having no "exciting power, possess a continuing power."

It appeared to me, when I first read these experiments, that if red light were admitted into the camera it would exalt the action of the light of the image, whilst itself incapable of acting alone. Thus it would simply stimulate the impression of the image, and cause the desired impression to be produced in a shorter time.

I did not, however, carry out these ideas, and M. Bazin is entitled to the credit of having just put them to practice. But the method which he employs seems to me not very convenient or suitable; certainly not for landscape work I have, therefore, adopted a very different method.

I make a rather dilute solution of carmine in water to which a few drops of liquid ammonia have been added, and paint this solution over a piece of white pasteboard or stiff paper till I bring it to a bright pink or light rose-colour, and with this paper I line the inside of the camera, avoiding, however, to place it against parts corresponding with strong lights. It is always to be recollected that the circle of light of a lens is larger than the back of the camera, consequently part of the image falls on the sides. If now this rose-coloured paper were placed where the image of the sky, or of any other high light, falls, the reflection would be too great, and there would be danger of fogging. Generally speaking, the paper may be placed advantageously opposite those parts where the lighting is insufficient.

As yet I have made but few trials. The results indicate decisively that the strength of the image is materially increased, and that this device will be useful in all cases where very short exposures are wanted. Where a full exposure can be given, the advantage is less decided, but for rapid work the advantage is incontestable.

To ascertain if the red colour was really an active agent, a careful comparison was made by substituting *white* paper, as in the old method lately revived by Mr. Blair's experiments, and it was found that the red unquestionably had a peculiar and advantageous influence.

It seems not improbable that this method may be valuable for portraiture as well as for landscape work, by shortening exposures and gaining detail.

WEIGHING AND MEASURING.

BY M. CAREY LEA.*

In the previous portion of these remarks I spoke of the conditions necessary for obtaining regular and habitual accuracy in the operations of weighing. Before proceeding to those of measuring, it seems worth while to describe a practice which I have nowhere seen in print—indeed, have known to be used only by myself—and which, simple as it is, is a great convenience, and adopted by me invariably since first tried it.

Selecting a letter-paper not too thick, and with a hard, smooth, glazed surface, I fold it over several times, and give it to a binder to cut into squares of such a size as will just conveniently lie upon the pan of the balance. The binder is directed to cut all the pieces to exactly the same size; a pile an inch in thickness is made by four cuts, one for each side.

Now a pair of scales is rarely in such a condition that the two pans exactly balance, and if they are made to balance by filing the bottoms, they soon cease again to do so. But if we put a piece of this letter-paper into each pan, and then bring them to balance by tearing off or adding a few scraps to the pan that is to carry the weights, it is evident that we may take many weights, each with a fresh piece of paper in the other pan, without needing to re-adjust. The machine-made paper now in universal use is so regular in its texture that pieces cut three inches square, in the manner that I have described, will rarely differ in weight amongst each other by as much as a quarter of a grain; of course, if an exception presents itself, it cannot fail to be noticed in time. I do not think that any one who fairly tries this plan, and realizes the convenience and saving of time which it effects, will ever disuse it.

Measuring.

The operation of measuring is never as accurate as that of weighing. The same difference in accuracy that exists between ordinary careful measuring and ordinary careful weighing will be found also between the burette and the analytical balance.

The measuring-glasses or "graduates" now in common use are made by pouring mercury into them. The quantity

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[*] *Philadelphia Photographer.*

[*] Continued from p. 261.

of mercury is ascertained beforehand to be equal in bulk to the water weighing the amount when the graduate division is to measure. Mercury is preferred for several reasons: principally for this, that as it does not "wet" the glass, none is kept back by attraction, but the whole can be transferred.

The danger of mistakes is far greater with measuring-glasses than in weighing—is greater than most persons would find it easy to believe; but it may be proved in various ways. Anyone desirous to verify his measurements can make the following experiment: measure off at once sixteen ounces of water in a sixteen-ounce graduate and pour it into a bottle; next take a one-ounce graduate, and measure off successive ounces from the portion thus placed in the bottle, until the whole is consumed, and compare the result.

The surface of water or of other liquid in a measuring-glass is not plane or level, but represents a parabolic curve. The liquid is drawn up the sides of the glass by capillary attraction, and the whole surface has a meniscus curvature. It is the central or lower portion of this curve that should correspond with the ruled line of divisions, and not the upper.

If the operator, having made as accurate a measurement as he can, changes his position so as to alter the manner in which the light falls upon the glass, he will find that his measurement no longer appears correct, but seems to be more or less than right. What was, or appeared, right when the light came from above, is no longer so when the light comes in level lines, or is thrown up from below. Of these, the best results are given by a level or horizontal light. A good burner on a level with the eye is very convenient for taking measurements. On the other hand, light from a gas-burner, considerably above the observer's head, tends to very incorrect results.

Another matter of considerable moment is the holding of the measuring-glass perfectly perpendicular. A very little error in this respect will quite vitiate the results. And the evil of this increases directly with the diameter of the upper surface of the liquid as it stands in the measuring-glass. For this and for other reasons, narrow, deep graduates are to be preferred to broader, lower ones.

Narrow, deep vessels of a cylindrical shape will give more accurate measurements than those that are conical, and are much used for exacter work. With burettes still more accurate work can be done, especially, as I have shown elsewhere, when a particular arrangement is used for making correct readings.

Specific Gravities.

The combined operation of weighing and measuring gives the *specific gravity* of a substance which represents the relation of weight to bulk. This determination may be made in two ways, viz., by ascertaining the weight of a given volume of the substance (specific gravity bottle), or by examining its buoyancy (hydrometer).

The last is the least troublesome, especially when a number of specific gravities of liquids are to be taken; but the first is by far the more accurate. Not only is the reading of the hydrometer less exact, but a great many of them are very carelessly and indifferently made.

It is hardly safe to use a hydrometer without first testing it with a specific gravity bottle. The latter is a small vial closed with a tube-stopper; the tube has a capillary bore like that of a thermometer; the liquid being poured in nearly up to the top of the neck, the stopper is inserted, and the excess of liquid escapes through the tube-stopper, and is wiped off. The bottle is of such a size that when filled with distilled water it has a given weight at a fixed temperature generally of 62° F., though sometimes 60° or 70°. A 200-grain bottle or a 10-gramme may be considered the best sizes. The only precautions necessary are to have the bottle thoroughly clean inside before pouring in the liquid to be tested, and to wipe the outside perfectly dry before taking the weight, handling it as little as possible, so as to avoid raising the temperature.

The specific gravity is indicated at once by the weight of the liquid. If, when the 100-grain bottle is filled with nitric acid, the weight of the contents proves to be 145 grains, this, of course, indicates a specific gravity of 1·45. Having determined the specific gravity of any liquid, this may be used to test the accuracy of hydrometers by allowing them to swim in it, and noting the indications, and how far they are correct.

In using the hydrometer, care must be taken in two different ways: it must be lowered gently into the liquid; if allowed to slip quickly in, it will sink too far, and then rise again with the stem wetted above the line of the liquid. The hydrometer, having thus an extra weight to carry, will give an erroneous indication. Also, it must not be allowed to touch the side of the vessel, or it will be held there slightly, and not move freely.

The degree should be read off by looking from below and using a level light. Managed in this way, results of tolerable correctness can be got, but not equal to those of the specific-gravity bottle.

EXHIBITION AT CARDIFF.

The exhibition of fine and industrial art recently opened at Cardiff appears to be a success. The *Cardiff Times*, in noticing the fine art department, has some passing allusions to the photographs which may interest our readers. Speaking of the room devoted to water colour drawings of photographs, it says:—

"Once in the room, we see a screen running down its length, hung on both sides with water-colours. The wall facing the window contains a set of photographs by P. Bedford, the artist who accompanied the Prince of Wales to the East. At the opposite end of the room, etchings and engravings of Rembrandt, and a drawing of Rubens. On the left hand wall are etchings of ornamental articles in the South Kensington Museum, and on that dark wall to the right is the most precious portion of the exhibition. The wonderful photographs of H. P. Robinson and Blanchard, lent by Robert Crawshay; the series of photographs of original drawings by Raphael and Michael Angelo; and the series of portraits of Spanish and Portuguese architecture, contributed by the Science and Art department, South Kensington.

"Now we will turn to the photographs on the dark wall. The days of the steel engraver are numbered. As surely as screw tonnage is driving away the sailing ship from the ocean, the photographer is pushing the engraver off into space. It takes twenty years to enable the line engraver to earn journeyman's wages, and when he is a journeyman, engravings take him years and years to accomplish. The swift sunbeam laughs at him, and does all to perfection. But the sunbeam can't compose, you say. Yea; but the artist can compose for the sunbeam. Here is one, by name H. P. Robinson. He chooses his landscape with a fine foreground of fern, corn-fields in the distance. He arranges for a country maiden to stand for him, with a gathered sheaf in her hands. In short, he composes a picture with actual materials. It is a showery day; a cloud advances, and lets fall a purple veil over half the picture. He seizes the moment, and before the drops have reached his camera, his picture is taken. It is a fine picture, too; but lacks all the glory of colour. We have faith, however, that science will yet accomplish this, and then, alas! for the noble sphere of the Fine Arts proper. We would not willingly limit it, or let any of it die. Sleep, the Trysting Tree, Maid and Pitcher, and Sea View, by the same artist, are all wonderful works of an extraordinary size. But most wonderful is that of Sea Gulls (305). The reader will remember noticing that in landscape photographs the near trees are generally blurred. This is owing to the motion of the leaves in the air proving too swift for the sunbeam. But now let him look at these sea gulls on the wing. There is not a blur, not a symptom of a waver. They have been caught in an atom of time, and the act of that atom is stereotyped for ever. It is deemed an achievement when a photgrapher succeeds in transfixing the smoke of a cannon just fired. It requires very strong chemicals, and is liable to get him into trouble. But this acheivement with the sea gulls is a truly extraordinary triumph of the photographic art. How far this kind of aid will assist the animal painter—render his studies less arduous, and himself a lazier, less well-informed, and less accomplished man—it is hard to say; it is to be feared he will degenerate.

"We must leave the visitor to look with delight at the photographs of the studies of Michael Angelo and Raphael. There they may see the arduous steps by which the great artist climbs to fame, and how marvellously accurate became every stroke of these men when pourtraying muscular action under every conceivable circumstance of attitude or perspective. After that he will be delighted to wander amid the ecclesiastical glories of Spain and Portugal. South Kensington has here contributed some of its most recent acquisitions. He will marvel at the beauty of the Cathedral of Coimbra, and at the monastery of Batalta, Portugal, especially at the lace work in stone of delightful design in the 'west angle of Octagon' in that building. We leave him to roll in the lap of luxury until he agrees with us that, after all, a man can't live on paint, and that it is pleasanter to cut up a chicken than a picture—such 'murder' De Quincy would surely say may be 'considered as one of the Fine Arts.'"

THE WAR AND POPULAR CARD PORTRAITS.

The *Daily News* has the following:—

"To a philosophic student of contemporary events there is no more instructive spot for reflection than the windows of a carte-de-visite shop. The rise and fall in the popularity of specific likenesses is a wonderful gauge of public sentiment. The manner in which periodical favourites are forgotten and discarded forcibly illustrates the evanescence of greatness or of notoriety. At the commencement of the war, for instance, there was a tremendous run upon the portraits of General Prim and of the Prince of Hohenzollern. The anxiety to inspect the countenances of these personages caused the removal of the Greek Brigands, who had been a standing and an ugly dish, behind the panes. Neither the Prince nor Prim lasted very long; they were gradually removed from the more prominent situations, and are now mixed up with that singular mob of opera-singers, bishops, and duchesses who are always fair stock material for an album. On the publication of the Secret Treaty, Bismark made his appearance. It was evident that he had been kept on hand for contingencies. The early copies bore unmistakable evidence of having been taken a long time back, but the enterprise of the trade was quickly able to satisfy the exigency of the occasion. A bran new edition of Bismark was imported. He is now in the ascendant. On every fresh account of a Prussian victory the crowds who stare at newspaper bills will enjoy a subsequent gape at the visage of the Chancellor of the North German Contederation. Some shops have whole strings of Bismarks, like ropes of onions. They seek customers for the article by displaying their enormous efforts to meet the demand for it. But Bismark pure and simple is not enough. A few years ago the famous Minister, by an accident which gave rise to a considerable amount of speculation in idle circles, was photographed *tete-a-tete* with a fascinating prima donna. The scandal-mongers of Paris rushed at this carte at once. It had an enormous sale, especially as a report was spread that it was being bought up by admirers of the statesman, who did not desire their idol to be the butt of French wits. We have the picture at present exhibited in our windows, and it is rather amusing to hear some of the guesses offered at the name of the lady who figures in it, the common impression being that the pair consists of Mr. and Mrs. Bismark. Of course, as in all articles of British commerce for which there is a demand, the sale of photographs is not, in certain quarters, above the reproach of dishonesty. In poor neighbourhoods there is a strong temptation to label the cartes with attractive titles which do not belong to them. A genuine Bismark, which costs from a shilling to eighteenpence, is not familiar to the inhabitants of localities who take upon trust a faded Colenso for a correct portrait of the distinguished foreigner. The King of Prussia and Von Moltke follow Bismark in photographic popularity. 'Fritz' is rare, but rapidly ascending in shop-window estimation. The Emperor of the French is much sought after. Artists unfriendly to his *regime* have struck off enormous quantities of caricatures of a rather cruel description, in which his Imperial Majesty hobbles on crutches, wears a hump in the fashion of Mr. Punch, and carries little Louis pick-a-back, as beggars bear their brats. Throughout the cheap news and tobacco shops of London this device is extensively distributed. It is as cruel as the exaggerations of Gilray. The Empress has hitherto escaped similar treatment. The Empress, being steadily required for album decoration all the year round, does not, as yet, seem to have been specially prepared for the circumstances that have brought her still more into vogue.

"The effect of the war on the sale of likenesses of English living worthies is not potent, and seems to be confined to a multiplication of one of Mr. Gladstone's familiar portraits. Besides what may be seen in the photograph shops, it may be noted that in the more obscure quarters of the town the war brings to light the most extraordinary pictorial rubbish. Illustrations of scenes in the Crimea, fly-marked, dingy, and crumpled, are hung out to suit the prevalent feeling; ancient sea-fights in oils are suspended at the doors of those hospitals for crippled furniture which abound in certain districts. But for the declaration of war between France and Prussia we should never be startled by the disinterring of these curiosities of engraving and painting. Then we have piano composers, who are not forgetful of the prevailing topic, and whose pieces for instrumentation are nominally suggestive of the Rhine.

"The various industries to which we have referred only indicate in a small measure how deeply the interest in the one absorbing topic has penetrated in every direction. The carte-de-visite shops may do some service in this connection. At their windows all the world may see that its rulers, its great generals, statesmen, emperors, and kings are by no means demi-gods. There is nothing about them to suggest that sort of enthusiasm which sends thousands of men into battle, to die or to be maimed. Familiarity with the portraits of celebrities, if it does not breed contempt for the originals, gives the mind at least a practical turn, and serves as an admirable corrective to any instigations towards hero-worship, to which even sensible persons are spasmodically liable."

SUGGESTIONS ON POSING.

BY J. H. KENT.

The extra difficulties of most photographers are the nerves and ignorance, and fidgets and waywardness of their sitters. Persons usually come to a photograph gallery with a set purpose to be buckram, and a certain foreknowledge of getting swindled, or else with so little purpose that they are too passive to manipulate into anything more expressive than putty. The majority come with a cherished dread—"had as soon encounter the dentist or the hangman," a state of mind conducive of anything but a happy expression. Some come with the crudest notions of what they want or how it is done, ask to have a "likeness struck off," and follow their noses and finger-boards to the letter. Posts and blocks and imbeciles come of these, unless great care is taken. If told to look at a point, they do look to that degree you repent of the injunction; or if asked to sit motionless, they emphasize the act till there is a twofold impression of themselves at either extremity.

There is but little choice in the genus sitters, all of whom to say the least, afford opportunity for patience, latitude for serenity, and scope for talent. The only remedy remaining is how best to meet the emergency.

In the first place, every photographer should be master of the situation; and not only that, but also master of his own nerves and temper and those of the sitter. By your own firmness and equableness, magnetize and tone into tranquillity the highstrung, and when the posts and blocks get around, by your ease and suavity unbend them and get them at their best.

All photographers have noticed that most persons when they come for pictures, and especially ladies, will declare "they never had a good likeness," that they "look horridly," and "their friends never recognize them," and "they have come for a last effort," &c. They will ask how they shall sit, where they shall put their hands to get them out of sight, what they shall look at, and nearly always insist that the light is too strong for their weak eyes. Certainly no good picture can be made of a person in this nervous, anxious frame of mind. So in your instructions and conversation get their thoughts as much as possible off themselves, and assure them that the only requisite to success is a perfect indifference on their part, and passive submission to being posed, and keeping so until the plate is exposed.

If, on the other hand, the sitter is inclined not to talk, and sits with a dogged determination to be photographed a martyr, talk to him, and by some stroke of policy get him to open his mouth and relax his muscles, keeping him the while in the position that presents the best face to the cameras.

In regard to eyes. It is not the strong light usually, but the idea that it is something terrible and will nearly blind them. This can generally be remedied by a little skill and tact. Place several small and interesting objects at quite a distance from the sitter, and request him to look at and study all of them. Finally, as you expose the plate, call his attention to one in particular. In this way the eye will never become watery and tired before, if it does during the sitting.

Generally allow no long pauses in conversation, giving no time for the feet and hands to become conscious.

At the same time work, and work to a purpose. Let every motion count, but never hurry. Do dexterously, but not obviously the posing. See with rapid glances your rocks ahead: that a big nose will not beautify a profile, that blue eyes must not be turned toward the light, that long necks and long faces must have the benefit of an inclined brow, that really weak eyes must be turned downward to some definite object, that high chignons, big collars, and blue bows disfigure, and should be banished. See all these things to obviate, but not to embellish your conversation. Get your sitter's thoughts away from his own peculiar blemishes, which would only be aggravated by any effort on his part at concealment. The art lies wholly with yourself, and the greater your skill the more certain your success.

For despatch and convenience, it is best to have accessories arranged and waiting. In rustics, have the scenery adjusted, the rocks, stumps, stones, foliage, and backgrounds all effectively made up, with suitable openings in which to place your subject. By thus doing, there intervene no long moments of waiting—no losing heart and expression on the one side, nor a hurried, jumbled-up mess on the other. Also have at hand, books, fans, flowers, ornaments, yellow-tinted letters filled with suggestions with which ladies can beguile themselves and their hands. Have canes, hats, pencils, pens, and more books, to ease off the angularity of masculines. Provide jumping-jacks, barking dogs, tin-whistles, jews-harps, and a small organ, to bamboozle the babies. Besides, be able yourself to turn into an acrobat, gymnast, or long-tailed monkey, on the shortest notice.

To astonish one of these small fry into a moment's quiet, at whatever cost to your dignity, manhood, grace, or suspenders, will elicit, if not the maternal admiration, her broadest grin, who half believes you are rehearsing for her benefit some former accomplishment acquired when you were connected with the circus.

Drapery, as we all know, has important considerations; a quick, intuitive perception of its effects should imbue every photographist. It is better to lose occasionally an opportunity of improving one's exchequer by sending a customer away for more harmonizing attire, than sacrifice both picture and reputation. Simply getting a likeness is the lowest idea in photography. The likeness must be had, but with it all the added advantages of position, presentation, light, and mood.

The camera, undirected, can produce no better than a Japanese jack-knife. There must be brain and art behind it. Untiring assiduity must be given to these matters, and effects be a perpetual study.—*Photographic Mosaics.*

Recent Patents.

PHOTOGRAPHY AND GRAPHOTYPE FOR PRODUCING PRINTING SURFACES.

BY E. ROPER AND G. SHAW.

The following specification describes several methods of producing printing surfaces in which photographic and graphotype processes are employed:—

Our invention consists of the several processes hereinafter described, by any of which, in combination with the process known as the "graphotype process," and described in the Specifications of Letters Patent No. 2309, A.D. 1860, and No. 664, A.D. 1864, we produce printing surfaces which may be used after the manner of engraved blocks, plates, or cylinders.

In the said graphotype process as heretofore practised the design to be printed is drawn in glutinous ink on a block or plate of compressed chalk, and when the ink is dry the chalk between the lines is brushed away, so as to leave the said lines in relief. The plate is then hardened by saturating it with silicate of potash, and printed from, or a cast is taken from the said plate by stereotyping or electrotyping.

Now according to our invention we transfer on to the plates of compressed chalk, in the ways hereinafter described, prints or mouldings from casts, or reliefs, or intaglios produced by photography or otherwise, or we copy the said reliefs or intaglios on to the said plates by means of any suitable pentagraph or other suitable copying apparatus, and thus adapt the graphotype process to the reproduction and multiplication of drawings, woodcuts, engravings, photographs, lithographs, or other printed matter.

According to our first process we take a mould by electrotyping or by moulding in soft metal, by pressure, or by casting from a relief obtained by exposing a film of sensitized gelatine or other similar organic matter under a negative or positive photograph, print, or drawing on paper, glass, or other material, to the action of light, as is well understood. Whether this mould is used direct, or whether another mould is taken from it and used, will depend upon whether the photograph, print, or drawing is a negative or a positive, and upon the kind of print required. We mount the metal mould, and place it, with its face upwards, on the bed of a hydraulic press, and sift on the said mould, chalk, or other suitable material, to a depth of about half an inch. Upon this we place a metal or other backing of plate, and subject the whole to pressure, as in the graphotype process. We now have a perfect cast in chalk of a metal relief, or intaglio mould, or casting plate. We harden the parts of the said cast which are in relief by coating them with silicate of potash or other solution which will harden chalk. We apply such solution either by means of a roller, or by soaking tissue-paper in the said solution, laying the saturated paper on a flat piece of vulcanized india-rubber, and pressing the chalk cast gently on the said paper, or by placing the surface of the said cast for an instant in contact with the solution contained in a shallow vessel. We then deepen the hollow parts of the said cast by brushing away the chalk until the hardened lines or surfaces stand out in sufficient relief for printing purposes. A graphotype plate or block is thus produced, which may be hardened and stereotyped or electrotyped from in the usual way. In some cases the chalk may be sifted direct on a dry gelatine relief or intaglio, and a cast in chalk obtained by pressure as hereinbefore described. Casts in chalk as hereinbefore described may be taken from other surfaces which are not produced by photography, as, for instance, from a wood block, or from an electrotype mould taken from a wood block, or from any other surface. Instead of pressing dry chalk into the mould referred to, a cast of the said mould may be taken in a mixture of chalk, gelatine, or size and water.

According to our second process we take a chalk plate as prepared for the graphotype process, and coat the said plate with a solution which will render it waterproof; we then coat the said plate with a thin film of gelatine or other similar organic matter mixed with a solution of bichromate of potash; when this film is dry we place the plate, with its sensitized face upwards, under a drawing, engraving, or print, or under a positive or negative photograph of a drawing, engraving, or print, or under a positive or negative photograph taken from nature and produced in lines or grain by any suitable process, such as printing from a grained or lined negative, in conjunction with an ordinary negative film, and we then expose the sensitized film to the action of light, and develop the picture with water, as is well understood; we then, by means of a suitable solvent, remove the waterproof ground from those parts of the plate which are not protected by insoluble gelatine; this is best done by saturating cotton wool with the solvent used, and passing the said wool quickly two or three times over the surface of the plate, then allowing it to dry, and again applying the solvent. In order to prevent the said solvent from carrying the waterproof ground into the plate, we prefer, previously to coating the plate with the waterproof solution, to saturate the said plate with copal or other varnish, and then to place the said plate in a japanner's stove until hard. After the removal of the waterproof ground from between the lines the plate is ready for the operations of "brushing out," hardening, and moulding, or casting, or electrotyping, as in the graphotype process. In some cases we use a waterproof solution, such as plain collodion, which can be brushed out in a dry state with the chalk, so as to avoid the necessity for washing with a solvent.

According to our third process we obtain by any photo-lithographic or photo-zincographic process a transfer on stone or zinc, and take an impression in strong "tacky" or other suitable varnish from the stone or zinc on to a transfer paper coated with turpentine or other varnish, which paper so coated has been stoved, so as to dry the varnish hard. We lay this paper, with its printed side uppermost, on water for a few minutes, and then place the said paper, with its printed side downwards, upon a chalk plate, and put them under pressure. We then remove them from the press, and sponge the paper with water, and remove the said paper from the chalk. On being thus removed, the said paper takes with it the film of stoved or dried varnish, except in those parts which constitute the lines or marks of the print or design, which lines or marks of varnish are caused to adhere to the chalk plate by the strong "tacky" varnish aforesaid. The said plate is then stoved, in order to harden the said "tacky" varnish, which being done, the plate is brushed out, hardened, and otherwise finished according to the graphotype process.

According to our fourth process we coat smooth, thin, fine paper with a mixture of gelatine, sugar, and Indian ink, or other colouring matter; when the film is dry we saturate it with a solution of bichromate of potash; when the paper thus sensitized is dry, we give it a smooth surface by rolling or otherwise, and expose it under a negative or positive to the action of light, as hereinbefore described; we then fasten the sheet, face upwards, on a board, and coat the said sheet evenly and thinly with copal or other turpentine varnish, and dry the said sheet in a japanner's stove until the varnish is quite hard; we then take a sheet of transfer paper slightly larger than the sensitized sheet, roll the said paper, and coat it with copal or other varnish, and when it is nearly dry (*i.e.*, "tacky") place the two sheets with their varnished sides together, and pass them through a rolling-machine; we then place the compound sheet thus formed, with the transfer paper undermost, on a board, and clamp upon the margin of the transfer paper a frame with india-rubber under its bottom edges, which frame forms, in conjunction with the sensitized paper, a dish, into which we pour warm water. The frame described serves to hold the transfer paper down, and to prevent the water from flowing under the back of the said paper; but any other means which will effect these purposes may be employed. The warm water soon releases the backing of thin paper, which brings with it that part of the gelatine which has not been rendered insoluble by light, and thus develops the print, which we wash, and allow to dry, and which consists of lines of insoluble gelatine adhering to the varnished transfer paper. When dry, the said print is ready for transferring on to the chalk graphotype plate in the following manner:—We coat the face of the print with a weak solution of size, and then float the said print, with its face upwards, on water for a few minutes; we then place the said print, with its face downwards, on the graphotype plate, and put a few folds of paper at the back of the said print, and subject the whole to pressure; we then remove the said plate and paper from the press, and sponge the said paper with water, and remove it from the said plate. The design or print is now left in lines or marks of insoluble gelatine and dry hard varnish on the plate, the transfer paper, when removed as above described, taking with it the varnish from between the said lines or marks. The plate is now ready for the "brushing out," hardening, and subsequent operations of the graphotype process; or, instead of mounting the sensitized varnished sheet above referred to upon varnished transfer paper, we mount it on a chalk plate coated with a waterproof solution, as described with reference to our second process, and then proceed to develop and finish as described in that process.

According to our fifth process we coat a piece of transfer paper with copal or other varnish, and dry and harden it in a stove. We then brush or pour over this a mixture or solution of gelatine, sugar, and bichromate of potash. When this is dry we print under a negative, and then coat the face of the print with a strong varnish ink, thinned with turpentine or other suitable spirit. When the said turpentine or other spirit has nearly all evaporated, we place a frame over the print, as before described, and develop the said print by means of warm water. We then float the print, face upwards, on water, and transfer the said print by pressure on to a chalk plate, which we finish by the graphotype process.

According to our sixth process we prepare a chalk plate, as in the graphotype process, using by preference a finely-perforated metal plate for the backing or support of the chalk, instead of a plain metal plate. We coat the surface of the said chalk plate with a film of gelatine, sugar, and Indian ink, or we coat a zinc plate or any suitable surface with chalk mixed with size; when the film or layer is dry, it is sensitized with a solution of bichromate of potash; we then dry the plate as quickly as possible, and print under a negative; we now gradually saturate the plate with cold water; we then wash it in warm water, and develop the print carefully with a camel-hair brush, with which we remove the soluble portions of the gelatine and the chalk underneath such portions; after which we again wash the print in several waters; then dry it, and brush out and deepen the lines (when necessary), and harden the chalk plate according to the graphotype process. In some cases we brush the plate into relief whilst it is in a wet state. Instead of coating the chalk plate with a solution of gelatine, sugar, and Indian ink, we sometimes use a glass or other plate having a smooth surface, and coat such plate with a solution of gelatine, sugar, Indian ink, and bichromate of potash. When the resulting film is dry, we remove it from the glass or other surface, make it slightly damp on one side, place that side on the chalk plate, put the whole under pressure, and when the whole is dry we print under a negative and develop, brush out, and finish as above described.

By our seventh process we proceed to make transfers to the graphotype plate by any of the foregoing methods for producing the lines or marks of the picture in varnish, but by using a positive photograph instead of a negative to print from we obtain on the chalk a print in which all the black lines or marks of the said positive are white or untouched chalk, and all the whites of the said positive are covered with varnish; we then take a piece of thin paper, and saturate it with a solution of silicate of potash, or with any other solution which has the power of hardening chalk; this saturated paper we lay upon the face of the chalk plate; we then pass a soft roller over it, which causes the paper to come into close contact with the bare chalk, which chalk absorbs the hardening solution, and becomes hard. We then remove the varnish with a solvent, as previously described, and brush out, harden, and finish as by the graphotype process.

All the foregoing processes can be adapted to the production of rollers or cylinders for printing purposes, either by covering a cylinder with a layer of chalk (either by compression or casting), transferring on to it, and proceeding as before described, or by bending the stereotypes or electrotypes produced, as already described, to the required curve or form.

We also, by means of pentagraphs or other suitable copying apparatus, draw on chalk plates copies of photographic reliefs representing natural objects, or drawings, or prints, or of medals or reliefs produced by photography, as aforesaid, or otherwise; and we adapt such pentagraphs or apparatus for our purpose by using a brush or wheel charged with graphotype ink, instead of the usual marking point, and placing a chalk plate under such brush or wheel, and placing the relief to be copied under the tracing-point of the pentagraph or apparatus used. The tracing-point being made to travel over the uneven surface of the relief in parallel lines in any desired direction causes the brush or wheel charged with graphotype ink to make corresponding marks upon the plate very fine and weak, where the surface is high in the relief, and stronger as the point descends into the hollows, thus representing in black and white, or light and shade, the object to be copied. The chalk plate, after being drawn upon as described, is brushed out and finished by the graphotype process.

[Description and designs of pentagraph follow.]

Impressions or prints from woodcuts, stereotypes, electrotypes, etched or engraved metal plates, blocks, or cylinders; blocks, plates, or cylinders engraved by photography, or from type lithographic stones (whether the drawings thereon are made in lithographic chalk or in ink work), or zincographic plates, or reductions, or enlargements from Lewis's or other similar pentagraphs, may be made in a suitable printing varnish or a glutinous ink on transfer paper (which has been previously coated with copal or other suitable varnish, and dried), and transferred therefrom on to the chalk plate, as hereinbefore described.

Having now described the nature of our invention, and the manner in which the same is to be performed, we wish it to be understood that we do not limit ourselves to or claim the particular arrangement of pentagraph or copying apparatus hereinbefore described, as any suitable copying apparatus may be used. Neither do we limit ourselves to the use of gelatine and bichromate of potash, as other suitable organic substances may be used instead of gelatine, and other suitable sensitizing agents, such as bichromate of ammonia, may be used instead of bichromate of potash, and in some cases bitumen of Judea may alone be used instead of bichromate of potash and gelatine; but we claim as our said invention—

Firstly. Preparing or producing printing blocks or plates by pressing or casting chalk either on to a photographic or other relief, or on to a metal mould obtained from such relief by electrotyping, moulding, or casting, and hardening the face of the lines on the chalk cast thus obtained, and "brushing out" the said cast by the graphotype process.

Secondly. Preparing or producing printing blocks or plates by coating chalk plates first with a waterproofing solution, and then with sensitized gelatine or other suitable organic matter, and exposing the said plates under prints, drawings, or engravings, or under positive or negative photographs, developing the pictures, removing the waterproof ground from the unprotected parts of the plates, and then "brushing out" and otherwise finishing the said plates by the graphotype process.

Thirdly. Preparing or producing printing blocks or plates by transferring, by means of varnish in the manner described, photo-lithographs or photo-zincographs on to chalk plates, and then brushing out and otherwise finishing the said plates by the graphotype process.

Fourthly. Preparing or producing printing blocks or plates by coating thin paper with gelatine and bichromate of potash, or their equivalents, exposing the coated paper under a negative or a positive, then either mounting the said paper on transfer paper, and developing and transferring the picture from the transfer paper on to a chalk plate, or mounting the thin paper on the said plate, and developing the picture thereon, the said plate being finished in either case by the graphotype process as described.

Fifthly. Preparing or producing printing blocks or plates by coating transfer paper first with varnish, and afterwards with gelatine, sugar, and bichromate of potash, printing under a negative, coating the print with varnish ink, developing the said print, and transferring it on to a chalk plate, and brushing out and finishing the said plate by the graphotype process.

Sixthly. Preparing or producing printing blocks or plates by coating chalk plates with gelatine, sugar, and Indian ink, and then sensitizing with bichromate of potash (or mounting films of sensitized gelatine on the said plates, or coating zinc or other plates with chalk and size, and sensitizing), and afterwards exposing, "brushing out," and developing the pictures on the said plates as described.

Seventhly. Preparing or producing printing blocks or plates by transferring, by means of varnish, positive photographs on to chalk plates, hardening those parts of the said plates not protected by the varnish, removing the said varnish, and then "brushing out" and finishing the said plates by the graphotype process.

Lastly. Copying photographic or other reliefs on to chalk plates in lines of graphotype ink by means of pentagraphs or other suitable copying apparatus, and brushing out and finishing the said plates by the graphotype process.

Correspondence.

PHOTOGRAPHS BY MOONLIGHT.

Sir,—In the last number of the News you notice some stereoscopic pictures taken by moonlight, by M. Eugene Ogier, but in which, in consequence of long exposure, the moon is represented as an ellipse. We are glad to see that the possibility of getting moonlight pictures is beginning to be acknowledged. For the last four months we have had a large photograph, 14 by 10, representing the moon rising over the sea, in our portfolio, but have been almost afraid to show it, our Sea-gull picture of last year having taught us that any new thing, the method of producing which is not instantly apparent to the meanest capacity, must meet with doubt and opposition, and that sometimes the producers may meet with most enthusiastic abuse for their temerity. However, we venture to send you a copy of this picture, and beg to say that we shall be rather pleased than otherwise by anything your critical correspondents may have to say about it.

Moonlight effects have often been produced by photography, but these have hitherto been under-exposed and over-printed sunlight pictures, with the sun made to do duty for the moon, or the moon has been painted on the negative; but in the picture now before you you will see at a glance that these tricks could not have produced the effect.

As we believe that the discussion of a subject does much more good than could be obtained from the publication of a formula—read and forgotten in a day—we intend to follow the course we pursued with the "Sea gulls," and to refrain from giving any more information about the picture than that it is *absolutely from nature.* Robinson and Cherrill.

Tunbridge Wells, August 23rd, 1870.

[The photograph in question is a very fine seascape, fifteen inches by ten inches in size. A bold grand sea, the mass of which is in shadow, but still sufficiently made out, is illuminated by a bright track of light from the moon above, which, not quite at the full, and with its markings easily traceable, shines above in a grey twilight or moonlit sky, a sky partially covered with massive cumulus clouds, the upper edge of which is lit by the moon. Whether the view is lit by the light of declining day with the moon visible, or by moonlight, or by other means, we must leave to be determined.—Ed.]

TUNICARE.

Dear Sir,—I am much pleased to find that with some of your correspondents the Tunicare has proved successful: with me it has been just the reverse. Thus, having a collodion in use possessing every good quality except keeping on the plate, I, in an evil hour, was induced to try Tunicare; followed directions to the letter; divided my silver solution, about fifty ounces, into two portions, for fear of accidents; prepared four dozen plates; and all went well at first, but before night fog set in; I was obliged to use the other half of the bath and plates without Tunicare. Determined not to be beaten, I rectified the fogged half of the bath, but used only ten ounces in a small glass bath to coat quarter-plates; first two or three all right, then came fog again, with the addition of a plentiful crop of pin-holes. Used more care in washing the plates; gave them a rinse in distilled water; still, with all my care, the negatives were very inferior to those produced on bare clean glass. I have had the same troubles with albumen as a substratum, so think that the save-all trouble for a clean plate is not yet discovered. I am confirmed in this opinion by my photographic friends who have tried it, and now, when asked about it, hum-and-ha, and say it is—well, not so good as they at first thought it would be.—Yours truly, Thos. Gulliver.

TUNICARE.

Dear Sir,—Will you allow me to thank Mr. R. W. Barnes and "M. W. F." for their spontaneous testimony to my Tunicare. "M. W. F." enquires, Will Tunicare keep? I can promise him that it will. In the first few lots that were sent out there was a slight mistake in the proportion; but all sent out now will keep.—Yours truly, G. Jones.

Talk in the Studio.

The Raven of Barnaby Rudge.—We have been favoured by the Stereoscopic Company with card and cabinet portraits of "Grip," original of the raven immortalized by Dickens in *Barnaby Rudge.* He is perched upon a rustic branch of wood, about which ferns, wild flowers, and creeping plants are naturally arranged. The accessories were obtained, we understand, from Gad's Hill, and form an admirable and effective *entourage.* The photograph is very excellent, and the bird looks as weird and knowing as he is described in the well-chosen extracts from *Barnaby Rudge* printed at the back of the mount.

Obituary.—Our readers will regret to hear of the death of the ex-Chief Baron Sir Frederick Pollock, Bart., an able amateur and a warm friend to photography. He died on Tuesday last, full of years and full of honours, at the ripe age of eighty-seven years. For many years he filled the chair at the meetings of the Photographie Soc ety (of which he was president) with singular urbanity and ability, and only retired from the position he had held with so much advantage to the society a little more than twelve months ago, when his advanced years rendered his attendance at evening meetings no longer possible.

Pure Water Unknown in Nature.—Water, of all liquids with which we are acquainted, possesses the greatest power of holding substances in solution. And this solvent power is not confined to its action on solids, but extends also to gaseous matter, the solution being mechanical in some cases, and chemical in others. The power that water possesses in taking up some gases is extraordinary. In the case of ammonia gas, 780 volumes are soluble in one volume of water; and bearing in mind its vast solvent powers, there is nothing very extraordinary in the fact that absolutely chemically pure water is an unknown thing in nature. Rain water is contaminated with the ammonia and other gaseous elements with which it meets in its downward progress. Even snow, as Liebig has shown, contains a considerable quantity of ammonia. In using the word "contaminated," I merely intend to imply that rain water is not chemically pure, because there can be but very little doubt that the presence of ammonia is not altogether unimportant in its influence on vegetable life; nor is it unlikely but that the excessively invigorating effect produced on vegetation by a shower of rain may to a certain extent be due to its presence. I may just remark here that plants seem to revive more rapidly when sprinkled with water to which you have added a trace of ammonia solution, than when common water has been employed. I have tried this several times, and am convinced of its truth.—*Food Journal.*

To Correspondents.

One in Doubt.—In the instructions in question metallic zinc is meant. The object is to reduce the nitrate of silver into metallic silver.

B. L. F.—In the article to which you refer, in which we stated that we rarely used alcohol in the iron developer, we also stated that we used sugar, the formula then given containing, we believe, a drachm of sugar to an ounce of solution. This gives a slightly viscous or syrupy character to the solution, and enables it to flow over the film evenly without alcohol. Very little acetic acid is needed with such a developer. It gives a rich vigorous image, and is for many purposes preferable to a plain iron solution.

R. B. B.—The darkness and want of definition at the corners of your cards is due to the imperfection of your lens, which does not cover sufficiently. It is evidently of too short a focus, and seems to be altogether unsuited for producing card portraits with standing figures. You may improve the definition by using a small stop, but this will, of course, prolong the exposure. For vignette heads the lens may answer pretty well, but for full-length figures it is comparatively useless. 2. It is of no use to register a picture after selling copies. To secure your copyright, registration should take place before issuing any copies.

G. Lewis.—Half a gallon of water to each 7½ plate we should consider quite sufficient for the soaking in question, and the plates may be left any time from two hours to six or eight hours, after the use of two dipping baths of distilled water. 2. Lack of intensity may proceed from many causes, and often from different causes in wet and dry plates. In the wet plates, the most probable causes are, the use of collodion too new, or of collodion containing insufficient pyroxyline, the use of a weak silver bath, the use of a strong iron solution, throwing the developer on the plate in a manner which drives off the free nitrate of silver on its surface, exposure in a weak diffused light. Modifying these things, or the addition of a little sugar or gelatine to the developer, will effect an improvement. Keeping the collodion, adding to it a little of an older collodion, or, if it be thin, adding a little more cotton, will often effect an improvement. In regard to the Liverpool plates, insufficient exposure, bad light, or the too sparing use of ammonia, may be a cause of want of intensity. Want of intensity in the tannin plates may proceed from several causes; but you do not speak of the mode of preparation or development, and it is difficult, therefore, to suggest the probable cause.

J. S.—We have not used Cook's camera, but, from the examination we have made of it, we think very highly of the convenience and facilities it presents. When in use it is in the position you see in the engraving, the lower portion consisting of the box for the plates. Its exact weight or dimensions we do not know, but as there is no unnecessary space or weight used, these will practically consist of the size and weight of the camera and box of plates. It is used, like other cameras, on a tripod stand.

Ed. Horswill.—We find no reason to suspect the presence of hyposulphite of soda in the cards sent. The probable cause of discolouration is imperfect fixation from the use of weak, old, or acid hyposulphite solution, or the prints sticking together whilst in the fixing solution. In regard to the testing of mounting cards, whilst we are always anxious to afford our readers all information. in regard to their art, and to aid them in any way we can, the testing for the presence of hypo is a matter we have so often explained, that all photographers should be able to do it for themselves. We once more repeat instructions as to the mode of proceeding. The simplest test which the photographer can employ to ascertain the fitness of a mounting card for photographic purposes consists in the application of a drop of a 10-grain solution of nitrate of silver, which, if much be present, is followed immediately by the appearance of a brown stain, which should lead to the unhesitating rejection of the card. In some cases no stain is produced immediately, but if the card be moistened with the silver solution, and put away in the dark for a quarter of an hour, the yellow brown stain will indicate the action of sulphur if present. A still more delicate test is found in the iodide of starch. Make a solution as follows:—Iodine 1 grain, iodide of potassium 2 grains, dissolved in distilled water 1 pint. Add a few drops of this, sufficient to give a delicate blue tint to a very dilute solution of arrowroot, and fill two test-tubes with the pale blue solution. To one of these add a little of the water in which the suspected card has been soaked, and add an equal amount of pure water to dilute the iodine and starch solution in the other tube. This will permit an accurate examination of the change effected by hyposulphite if present in the water in which the card has been immersed. Hyposulphite of soda will quickly remove the blue tint of the solution to which it is added, by combining with the iodine; and any degree of change will be readily observed by comparison with the other tube held by its side as a standard. A skilful observer can detect a millionth part of hyposulphite by means of this test, which is one of the oldest and most trustworthy which can be employed.

R. T. L.—A weak solution of sulphide of potassium will increase the intensity of a negative by converting the image or a portion of it into sulphide of silver, which is black. This method is a good deal used in America. The objection to it is, that it occasionally causes stains, and the solution smells unpleasantly. The best plan is to use the solution dilute, and employ it in a dipping bath with a cover.

R. Masters.—As an amateur you may experiment with carbon printing without hesitation. The Autotype Company permit the use of their patent on condition of purchasing the tissue, &c., of them. 2. The single transfer process is, of course, somewhat simpler and easier than the double transfer, and answers very well for subjects in which reversal of the image is not a matter of importance.

M. R. S.—Mr. Johnson's new tissue is, we believe, now regularly supplied by the Autotype Company. It possesses many excellent qualities, and materially facilitates the working of the carbon process. See leader in the present number.

W. W.—For such a studio as you describe, white blinds will be sufficient, and the white material enclosed in your letter will answer well. The object of two or three sets of blinds is to regulate the depth of shadow in rooms which admit a large expanse of direct sunlight.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 626.—*September* 2, 1870.

CONTENTS.

PAGE
Mr. Edwards's Photo-collographic Process.......... 409
On the Production of Ceramic Photographs 410
Critical Notices 411
Echoes of the Month. By An Old Photographer 412
Photographic Rambles in South Wales.—No. 6. By Thomas Gulliver.......... 413
On the Preparation of Dry Plates. By Philip Holland 413
Clouds in Landscapes. By H. T. Anthony 414
Method of Detaching the Collodion Film of a Negative from the Glass Plate. By M. Jeanrenaud 415
Stereographs on Transparent, Tinted, etc., Paper. By Prof. J. Towler, M.D. 41
Photography and Surveying on the Continent. By Lieut. J. Waterhouse, R.A. 416
Correspondence.—Rapid Sea Views and Moonlight Pictures—Tunicare 418
Proceedings of Societies.—Liverpool Amateur Photographic Association 418
Talk in the Studio.......... 419
To Correspondents.......... 420

MR. EDWARDS'S PHOTO-COLLOGRAPHIC PROCESS.

The production of true photographic gradation or half-tone by means of mechanical printing has been a problem to the solution of which much skilful experiment has been devoted from the earliest days of photography. It had been given up by many thoughtful men as impossible, because, as they argued, all half tone in mechanical printing must depend on the conventional gradation of hatching or stippling, which, as represented by the grain obtainable in photo-engraving or photo-lithography, can be at best but a compromise or makeshift for the true gradation of a continuous tint found in a photograph. During the last few years, just when many men of experience were, as we have said, disposed to give the matter up as an impossibility, two methods of photo-mechanical printing were discovered which fulfilled the desired conditions, each of them involving new and previously unrecognized principles, utterly unlike those involved in previous effort in the same direction. The two processes in question are the photo-relief process of Mr. Woodbury, and the photo-collographic processes which Tessie du Motay, Albert, and others have worked out with more or less of success during the last few years.

By Mr. Woodbury's process mechanically printed carbon prints are obtained, in which the different thicknesses of pigment and insoluble gelatine which form the image are produced by pressure, instead of by the action of light.

The photo-collograph most closely resembles a lithograph. In printing it is produced on the same principle, namely, the repulsion of a fatty ink by every part of a surface which has absorbed water, and the facility of rendering that surface absorbent of water in every part but that containing the image. But there is this noteworthy difference between lithography and photo-collography: the lithographic stone absorbs water in every part where its surface has not previously received an image in fatty ink, but it has no *graduated* capacity of absorption; where the fatty image is, it repels water completely; where it is not, it absorbs water completely, and the image must be produced in black-and-white. The photo-collographic surface possesses a discriminative power of absorption, and, having taken water in the exact proportion that it has been protected from the action of light, it also takes ink in the exact proportion that it has been submitted to light, and so gives an image in true photographic gradation.

The principle upon which photo-collography is based is now pretty well understood; but the practical details upon which success depends seem to have been carefully kept secret by all who have worked out this mode of printing. As we have recently had an opportunity of witnessing the process in operation, some account of the details cannot fail to be interesting to our readers generally.

To Mr. Ernest Edwards is due the credit of having worked the matter out in this country, and of having imported into the process some new and important elements not before hinted at in connection with the process. The chief novelty of formula in his process consists in the addition of a trace of chrome alum to the solution of gelatine and bichromate of potash of which the film is formed, and by this means he secures a degree of hardness which gives great durability to the film, and permits the production of many impressions. By the use of chrome alum he is enabled also to dispense with any preliminary coating to secure adhesion to the glass.

There are two special sources of difficulty in connection with the process, which continental experimentalists have attempted to meet by different methods, namely, a tendency in the gelatine film to tear up and leave the plate during the treatment with a sticky ink, which it must receive in printing; and a tendency in the moist gelatinous film to get injured by pressure, and so become gradually spoiled by the time fifty or sixty impressions had been produced. In the process of Tessie du Motay the film is baked to secure hardness; but, notwithstanding this, we understand that about seventy impressions only can be produced from one film. In the process of Herr Albert a preliminary coating of sensitive albumen and gelatine thoroughly hardened by light is employed for the double purpose of securing adhesion and firmness. In some processes ground glass has been employed to secure adhesion. Mr. Edwards finds that the addition of chrome alum secures adhesion without a preliminary coating, and that it gives hardness sufficient to permit the printing of an almost unlimited number of impressions without wearing out the plate; and that its final failure to print is generally the result of some accident, rather than the result of gradual deterioration by printing.

The details of the process are as follows:—

A plate of glass about half an inch in thickness, or a little more or less, is coated with a measured quantity of the sensitive gelatine solution, sufficient, when dry, to form a film of the thickness of a thin card. Care is taken that it does not flow quite to the edge of the plate, as, by leaving an uncoated margin all round of about half an inch, the risk of leaving the glass in subsequent operations is much diminished. It is, when quite dry, exposed under a negative for about half an hour in a good light, the absolute time being determined by the actinometer; after this it is soaked in cold water to wash out all the bichromate, but not to dissolve any part of the gelatine. The plate may be left some hours soaking in the water at this stage; and, if it is not to be used at once, it is better kept there, as it is not desirable to allow it to dry before printing. At this stage the film presents an image in relief, but only very slightly so, which is desirable, as deep relief would materially interfere with the printing operations.

In most of the processes of this kind of which we have published details, the rolling pressure of the copper-plate press, or the scraping pressure of the lithographic press, has been employed. Mr. Edwards employs vertical pressure, the ordinary platin press, known to letter-press printers as the Albion press, having been selected. We believe that we were the first to suggest the use of vertical pressure in printing photo-collographic plates, a technical knowledge of the various methods of mechanical printing having suggested to us that a vertical pressure would be much less likely to injure the gelatinous film or to break the glass upon which it was supported than the scraping pressure of the lithographic press or the rolling pressure of the copper-plate press. In Mr. Edwards's operations our conjecture as to the advantages of the vertical pressure is fully confirmed. The plate of glass rests upon a sheet of vulcanized india-rubber about a quarter of an inch thick, which is laid upon the carriage of the press. The printing operations very closely resemble those employed in lithography. The printing surface is first moistened with a wet sponge; an india-rubber squeegee is then passed over it to remove excess of water; and this is further effected by pressing a sheet of blotting-paper upon it; it is now rolled with a fatty ink, which consists of lithographic ink thinned with oil. The roller is a novelty: it is not covered with leather like a lithographic roller, nor with the glue composition used in letter-press printing, but with india-rubber, which answers better than either. Some time and care are necessary in inking the image up in the first instance, and the operation requires a workman skilled in lithographic printing; but when once in proper condition, the working goes steadily on as we have described. The plate is sponged, the superfluous water removed; it is inked with the roller; a sheet of paper, dry, is placed upon the surface; the tympan, which is made elastic by a sheet of india-rubber, is brought down, the carriage run in, the platin pulled down, and the operation of printing is completed.

The paper employed may be plain plate-paper, or enamelled paper. The latter gives the finest prints, but their surface is very easily injured, hence a fine, well-rolled plate-paper is most desirable. To preserve the margins clean, a mask of paper is cut the proper shape and size, and this is laid on the plate each time after it is rolled, and removed after the impression is pulled.

One very important feature of this process consists in the possibility of printing in two tints at one operation; and the principle upon which this possibility depends is very valuable in other respects. Mr. Edwards finds that if a somewhat stiff ink be employed, it will only adhere to the most thoroughly exposed parts of the image, neglecting the half-tones, and yielding, on printing, a hard, black-and white picture. If, on the other hand, a very thin ink be employed, it adheres readily to the less exposed portions of the image, giving full effect to the half-tones, but, from its thinness, giving poor blacks. If, then, a properly exposed plate be rolled with a thick ink, it will adhere readily, the parts forming the shadows giving rich blacks. If the plate be then rolled again with a thin ink, the shadows will not be injured, but the half-tones will be perfectly rendered. In many subjects a black ink is used first for the shadows, and a warmer tint for the half-tones, by which a very effective result is produced.

By taking advantage of the principle involved, it will be seen, also, that the character of the print can be modified at will. If a plate have been somewhat over-exposed, so as to yield a flat, weak image, by the use of a stiff ink the contrast can be increased and a vigorous print produced. If the plate have been somewhat under-exposed and possess too much contrast, the use of a weak ink will give effect to the half-tones, without giving undue depth to the shadows. This principle seems to be one of the most important yet discovered in connection with processes of this kind.

The operation of printing is not very rapid, as it requires care. An ordinary workman will work off about two hundred and fifty impressions a day, but, as several small pictures may be produced on one plate, it is not difficult for one man to produce (say) a thousand cabinet portraits in a day.

There are some other interesting points of detail to which we may refer on returning to the subject. In conclusion, we may remark that the process seems to be the more remarkable the more carefully it is examined and the more fully it is understood. The exquisite accuracy with which the gradations in the negative are registered by the capacity of the insolated gelatine film to absorb water, and, having done that, to take a fatty ink in the inverse ratio of such absorption, and so yield an image in every gradation of half-tone down to deep black, is something very marvellous. It is worth noting, further, in conclusion, that as the picture is formed by gradations in quantity of the ink, it is manifest that an ink more or less transparent must be used, and not one as opaque as possible, which has hitherto been considered a desirable, if not necessary, condition of a good printing ink.

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ON THE PRODUCTION OF CERAMIC PHOTOGRAPHS.

Chapter III.—Grune's Method (*continued*).

The neutral black obtained by means of platinum toning is rarely a satisfactory tint for portraiture; but, fortunately, several modes of securing greater warmth in the enamel are available.

The process of substituting platinum for silver, and removing, by hypo, the chloride of silver formed by the precipitation of platinum, having been completed as described in the last chapter, the image is ready for the deposition upon it of other metals of warmer tones. If a warm purple or brownish black be desired, a modification of Selle's intensifying solution may be employed, by which a salt of uranium is precipitated. The solution which we have employed under the instruction of Herr Grune is prepared as follows: A stock solution of nitrate of uranium, five grains to an ounce of water, and a stock solution of ferridcyanide of potassium of the same strength, are kept, separate, ready for mixture. A drachm of each is taken, and the two mixed and added to a pint or more of water. The floating film, containing the platinum image, having been rinsed, is placed in the solution. It will gradually assume a warm or brownish tint, and, if left long enough, will become quite brown. To secure a warm black in burning, however, it is not necessary that a perceptible change should take place. After a little experience the proper time will be ascertained; but it is difficult to test the right time merely by watching the visible change, as the assumption of a very slight warmth visible to the eye will cause the image to assume a very warm or brown tone in burning, and an amount of toning with the uranium solution barely appreciable by the eye will give a rich warm black tint to the fired image.

If a warm toned image be required for transferring without burning, the action of this solution may be continued until a fine chocolate brown tint is secured. Or the modification of this formula proposed by a Danish correspondent may be employed. This gives a fine tone, if the image be not intended for burning, but merely for transferring to paper; its effect in burning we have not tried. The solution in question is prepared by adding a mixture in equal parts of the ferridcyanide of potassium and nitrate of uranium, about half a drachm of each, to four ounces of water containing one grain of chloride of gold. A very rich warm black tone is so secured, the exact tint of which may be varied at will by modifying the proportions of the gold solution and mixed solution of the uranium and potassium salts.

Another method of securing a rich brown tint in the enamel after burning consists in precipitating oxide of manganese upon the black platinum image. This is done by immersing the film in a moderately strong solution of permanganate of potash. Herr Grune finds that a solution varying in strength from ten to twenty grains per ounce will answer well. The toning, in this case, may be suffered to proceed until an appreciable brown deposit is seen on the image. The final result, in this case, will have no tint of purple or blue, but a rich deep brown or brown-black, very suitable for many subjects.

Another tint of brown or brown-black is obtained by the combination of iron with the platinum. The precipitate is obtained as follows:

Make two solutions—

No. 1.

Ferridcyanide of potassium ...	1 drachm
Water	1 pint

No. 2.

Perchloride of iron	1 drachm
Water	1 pint

Sufficient of these solutions must be mixed at the time of use, and the film containing the platinum image immersed therein. It will gradually assume a fine Prussian blue tint, ferridcyanide of iron being deposited. In burning, the cyanic acid is driven off, and the oxide of iron left communicates its own rich brown tint to the image, and, with the platinum, forming a fine brown-black.

Other metals may be deposited by precipitation, but we have mentioned those which are most useful and manageable. Iridium, which forms one of the most valuable aids to the enameller, when used as a pigment, is of comparatively little value when deposited by precipitation, and is a very difficult metal to manage. Chloride of iridium does not exist in commerce, and is very troublesome to prepare; and whilst oxide of iridium, applied as a pigment in enamel printing, yields the finest ceramic black known, the precipitate obtained by toning with the chloride yields only a poor, greyish black enamel. A moderately good neutral black may be obtained by toning with the chloride of palladium; but it is inferior in depth and richness to the black produced by chloride of platinum alone, and, being more costly, nothing is gained by its use.

Critical Notices.

THE FIRST HOUR OF NIGHT. By Robinson and Cherrill, Tunbridge Wells.

"The First Hour of Night" is the title given by Messrs. Robinson and Cherrill to a very charming photograph, consisting of a sea-view in a quiet, low light, and a gibbous moon shining in the grey evening sky. The size of the picture is eighteen inches by ten inches. We mention this purely mechanical circumstance first, because large sea-views with any claim to excellence have been rare in photography. Le Gray's large sea-views were so distinctively rare a thing in photography, that they created a sensation amongst photographers sufficient to preserve their memory amid the thousands of photographs produced and published until this day, fifteen or more years since their issue. The large instantaneous views, by Col. Wortley, of the Bay of Naples and other Mediterranean scenery, and his very fine series of views on the coast of the Channel Islands, representing moonlight and other unusual effects, are the only examples—besides those of M. Le Gray and some by Messrs. Robinson and Cherrill—which have attracted especial attention. Amongst the pictures exhibited by Messrs. Robinson and Cherrill in the last photographic exhibition were two or three large and very fine sea-views, amongst which was the "gull" picture which excited so much discussion. The photograph before us recalls the last-mentioned picture by possessing an effect produced by unexplained means. In many respects it is unlike most of the moonlight effects we have before seen produced by photography. The picture, although low in tone, is not so deeply gloomy as the majority, and the sea, crisp and sharp, is sufficiently made out. The gibbous moon is not, either wholly or in part, enveloped in clouds, but shines brightly and clearly in the sky, the markings on its surface quite traceable. A grand bank of cumulus clouds nearer the horizon have their upper edge illuminated by the moonlight, which also gives a bright track of reflected light in the water. How the moon was produced we do not know, but various methods will suggest themselves to the minds of experienced photographers by which such effects, or something similar, might possibly be secured.

Altogether apart from its speciality as a moonlight photograph, it is an exceedingly charming picture. The chiaroscuro is most satisfying; there is a grandness in the swell of the huge rollers thundering on the beach not often secured, and the clouds are amongst the very finest we have ever seen in a picture. Many of our readers will probably see it at the November exhibition; and, in the meantime, we shall hope to hear not simply of conjecture, but of experiment in the production of similar results.

ART: PICTORIAL AND INDUSTRIAL. An Illustrated Magazine. Nos. 1, 2, aud 3. (London: Sampson Low, Son, and Marston.)

Amongst the earliest enterprizes in photographic literature was the attempt to establish a photographic art journal. Upwards of twenty years ago such a journal was issued in America, and continued for a few years, but finally collapsed. A similar attempt was a few years afterwards attempted in this country, but came to grief, we believe, after the issue of a few numbers. Early in the present year another effort was made in the same direction, with, it must be confessed, a much better *prima facie* prospect of success than any previous attempt, from the simple fact that the recent rapid progress of photo-mechanical printing processes seemed to present unusual facilities for illustration. As events proved, however, the project was well-meant, but ill-judged. It did not possess sufficient technical value to interest photographers, and it was too essentially photographic to have claims upon the interest of the general public. Without entering into any examination of its shortcomings, it is simply necessary to say that as an enterprize it was not successful, and its publication ceased after the issue of a few numbers.

Out ot the ashes of the defunct photographic art journal has sprung a new journal with wider aims, a higher character, and, we doubt not, with much more certain and comprehensive chances of success. "Art, Pictorial and Industrial," is a monthly magazine, capitally and profusely illustrated by the aid of photography in various forms, with high class articles on art questions, very admirably printed and got up. Its size is large quarto, like that of the *Art Journal*, with which it has some features in common; there is, however, this essential difference: all the illustrations in *Art* have a photographic origin, although none of them is printed in silver or by any process in which the chance of fading needs to be estimated. In the two numbers before us we have examples of Woodbury's photo-relief process, carbon printing, and Mr. Ernest Edwards's new mechanical printing process, or "heliotype," as it is proposed to style it. Each number contains six whole-page illustrations. In the first we have a very charming large photo-relief print of a reproduction from a painting by Perrault, in which a little girl is soliciting a contribution "pour le petite chapelle;" a fine carbon print of a study of heads by Michael Angelo; and four heliotypes illustrating the capabilities of the process in various styles. A copy from a fine print of Albert Durer's St. Jerome in his study shows the fitness of the process for reproducing subjects in line. A copy of a Greuze from the Demidoff collection affords an example of a reproduction from an oil painting rendered by this process. The Earl of Derby's statue in marble and an interior of Ely Cathedral show that the process is as well fitted for doing justice to subjects from nature as to reproductions of pictures. The second number contains a carbon print and five heliographs, from engravings, drawings, paintings, and nature. The latter, a charming foreground bit, is a capital example of the process. The third number contains six plates, containing a larger number of pictures, all produced by the heliotype process. A copy of a very fine painting by the late John Phillip, entitled "Go, and sin no more," and a photograph from a statue of Samson and the Lion, by Thomas Milnes; two very charming symbolical drawings, by E. Vedder; a series of picturesque drawings of dormer windows; and six prints from Nielli, copied from originals in the British Museum, in illustration of a history of engraving commenced in the present number by Mr. Reid, Superintendent of the Print Department of the Museum. All these are decided successes as examples of photo-mechanical printing.

We can recommend this magazine to our readers as one of the best and cheapest art periodicals they can purchase. The articles—critical, technical, historical, and descriptive—on art are excellent, and each number contains six capital photographic reproductions of good works, many of which would be cheap at the price of the whole number.

THE FAMILY FRIEND. Part III. (London: Partridge and Co.)

We have before noticed this excellent family magazine as having a special claim on the attention of photographers, on account of its excellent engravings from photographs. Amongst other very fine wood engravings, the present number has one from a photograph by Mr. Rejlander, entitled "Bargemen and Donkey," a capital group with landscape background, the photographic characteristics being well retained in the engraving.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

The Origin of Photography, and the Coming Eclipse—Moonlight Pictures and Relative Intensity of Sunlight and Moonlight—Suicides with Cyanide—The Forthcoming International Exhibition—Accelerating Exposures by Red or Yellow Light—The Late Sir Frederick Pollock

I was recently present when the question was discussed, "To what country does photography owe its origin?" The question, simple as it is, and familiar as one should be with the history of photography, demands a pause of a moment or two for reflection before it could be answered. As I was called upon for a reply, I said that the discovery of photography as a practical process belonged solely to England, whilst the discovery of photography as a possibility was due to France. It is true that the first photographs were produced in this country by Wedgwood and Davy; but, as they failed to fix their pictures, they could scarcely be said to have discovered, to any practical purpose, even the possibility of photography. Nicephore Niepce first produced permanent photographs; Daguerre first discovered the possibility of developing a latent image; but the practical photography of the present day was the discovery of two Englishmen. Fox Talbot discovered the art of multiplying impressions from a negative, and Scott Archer the method by which our negatives are taken. Although England was the birthplace of photography, and its progress as an art and a science in the place of its birth has been at least equal to its progress elsewhere, it happens, oddly enough, that it has less status or recognition, perhaps, in this country than in any other. Nothwithstanding the great failure of the photographic operations in the last eclipse expedition, arising from this imperfect recognition, notwithstanding the superior photographic success of Germany on the same occasion, and the still greater success of America since, I cannot learn that any step has been taken or any effort made to secure a capable photographic staff for the observation of the eclipse of December next. The organization and arrangement of other kinds in connection with the expedition have been long under consideration, but of special photographic arrangements I hear nothing whatever. It is much to be hoped that the Indian *fiasco* will not be repeated.

Speaking of astronomical photography reminds me of the photographs by moonlight, notice of which has recently appeared in your pages, and which are described as possessing internal evidence of genuineness. That images of the moon can be taken easily enough we all know; and that if the exposure were long we should get the image in the form of a cylinder instead of a disc is tolerably clear; but that any portion of the earth's surface can be photographed by the light of the moon surely is scarcely credible, if the relative intensity of sunlight and moonlight be correctly estimated by scientific men. This has been stated to be in the ratio of 1 to 30,000; that is, that the light of the moon is thirty thousand times less intense than the light of the sun. Assuming, therefore, that the actinic power of the moon bears the same relation, it follows that a subject which would require one second exposure with sunlight would require exposure for five hundred minutes (or upwards of eight hours) in moonlight. It is true that in sunlight some subjects may be photographed "instantaneously," a term by which a somewhat indefinite point of time is expressed. It is said that an impression is made on the human eye in the tenth part of a second; and, assuming that period as equivalent to instantaneity, then an exposure in moonlight of fifty minutes might give a picture similar to one obtained in sunlight by an exposure of one tenth of a second. This is, of course, assuming that actinism diminished in the same ratio as illuminating power, which may not necessarily be the case. It is possible that the relative intensities of sunlight and moonlight may not have been estimated with perfect accuracy; but even if they are approximately correct, the difficulties of photographing by moonlight may be easily conceived.

More suicides from cyanide of potassium! In one case I see the photographer whose mistress had taken the poison gave solution of sulphate of iron, but too late to have any remedial effect. I fear that a precise knowledge of what to do in special cases of poisoning is not too familiar with many general practitioners, as the medical man in this case is reported to have said that sulphate of iron in moderation would not be likely to do harm under the circumstances! This is certainly not an emphatic recognition of the proper remedy for the poison.

The disastrous war which now distracts Europe is not, it seems, to interfere with, or, rather, is not to put off—for interfere it must—the projected international exhibition at South Kensington next year. The jurors, or committee of selection, for the photographic department have been appointed, but as their names have not yet been officially announced, I must be prudently reticent on the subject, and merely remark that the committee consists of three gentlemen whose experience in our art well qualifies them for the office.

It seems that the old idea of the use of "continuating glasses" has recently been revived in France by M. Bazin, who proposes to use red light in the camera as an accelerating agency. Old photographers will remember M. Claudet's experiments, in which he developed a latent image on a Daguerrean plate by exposure under yellow glasses. The theory was, that red or yellow light had the power to continue an action set up by the actinic ray, without having any power to initiate such action. This is possible, and, if it be so, it is very important; so much so, that it is surprising that it has not earlier been verified. What more easy than to make the camera a framework of wood with panels of yellow or red glass, and so expose the plate to the image of the lens and to accelerating light at the same time?

But the subject demands careful examination. It is quite possible that the action of light through red or yellow glass is equivalent to that action of weak diffused or reflected light which used to be employed to shorten exposures on Daguerrean plates, and which, a few years ago, was proposed by Mr. Gage for collodion plates. It is possible that the action of light once set up may be continued by rays so feeble that they would be insufficient to initiate the action. If this be so, it is a certain amount of weak light, in some degree controllable and measureable, which is required, and which, it may be, when the subject is once examined and understood, may effect a greater revolution in shortening exposures than either more sensitive collodion or more energetic developers.

Photographers generally must have heard with concern of the death of the ex-Chief Baron Sir Frederick Pollock. Although fast approaching ninety years of age, he retained until within a very short time of his death every faculty of body and mind in vigorous action. Winning honours as a boy at St. Paul's School; winning honours at Cambridge, as senior wrangler and Smith's prizeman in the same year; winning honours at the bar, where he for years divided the principal business as junior with Lord (then Henry) Brougham; winning honours on the bench; winning honours in the various scientific circles he adorned, the son of the saddler at Charing Cross has been in every capacity one of those men who elevate and dignify a nation. As kindly, courteous, and genial in private life as he was able in public life, he everywhere won regard. None who were familiar with his able presidency at the Photographic Society can forget the suavity, dignity, and lucidity which distinguished his remarks and his bearing at the meetings when he occupied the chair. His image was to occupy one side of the President's Medal; it may still form an appropriate memento.

PHOTOGRAPHIC RAMBLES IN SOUTH WALES.

No. 6.

BY THOMAS GULLIVER.

Vale of Neath (*continued*).

We will now visit the other river, which forms a junction with the Hepste at Pont-Neath-Vaughan. To do this we must pass under an archway near the bridge, and follow the course of a narrow tramway on the upper bank of the stream, and, at a few hundred yards from the village, we find a nice view or two composed by tall, overhanging cliffs, with creepers, wild plants, and brambles in profusion. Part of the arches of an old bridge near the centre of the river, and some stumps of trees on the opposite bank, contribute to render it a fine scene for the camera. Jogging on, we arrive at a bend of the river where there is a miniature cascade, with a tall poplar tree on the left, an old mill in the mid distance, and a glimpse of the distant hills in the centre. This will do very well in dry weather, but after rain the cascade is a boiling torrent, and the river banks one continued route of mud and slush.

Soon after passing this cascade we come to a bend in the river, and then take the left hand path; and a rare rough path it is, but lined with varied and picturesque scenery all the way. We now come to the Lady's Fall. A small stream of water descends from the rocks overhead, and, leaping for more than a hundred feet from point to point, joins the river, and both tumble over together an overhanging ledge into a dark, deep pool, worn by the never-ceasing action of the water. This, from several points of view, makes a splendid picture, fit to grace any photographer's portfolio. A calm day, after a few slight showers, is the time to take it. The river can be forded at about a hundred yards from the fall, and we can then climb the opposite bank, leaving the Lady Fall in the corner on the left hand.

A far rougher road is now before us: brushwood, thorns, and briars beset the path; squirrels hop about on the branches of the trees; a nimble-footed stoat crosses the road here and there; and often an unfortunate rabbit comes tumbling over and over through the brambles that hide the edge of the cliffs, and is knocked senseless on the hard stones that border the river. These and other little incidents dear to the lover of nature arrest the attention until we arrive at the Crooked Fall. This is one of those views that puzzle the photographer in order to get in all the subject, and the best way to meet the difficulty is, to take several views, and pick the best when developed.

We had just done so one lovely day last autumn, and packed up, and were on our return journey, when, on re-crossing the river, our assistant came to grief, and tent, box, and all went into the river. We saved him from much harm, and the negatives also; and, by the time we got over three miles, he was *nearly* dry, we were quite so, and the Angel Inn or White Horse—I forget which—offered us a welcome rest and good tea.

We then bid farewell to Pont-Neath-Vaughan, and wandered on to the Glyn-Neath station, and arrived in time for the evening up train for Aberdare. Stayed there that night; and, early next morning, ticketed ourselves for the pretty little town of Pontypridd, near the Rhonda Valley, by the aid of the Taff Vale Railway. We were duly credited of the Pontypridd station, and met there by my friend Mr. Thos. Forrest, the local photographer.

ON THE PREPARATION OF DRY PLATES.

BY PHILIP HOLLAND.

The matters which form the subject of the present communication is the result of a series of experiments undertaken some two years ago, with the view of simplifying the methods hitherto adopted in the preparation of dry plates, so as to avoid any unnecessary expenditure of time and labour.

Of the various processes described in the pages of the photographic journals and elsewhere, there are two which especially recommend themselves to our attention, viz., the tannin, and the collodio-albumen. I mention these more particularly, since pictures produced by them are of undoubted excellence, and both are suited to the method of working to be here set forth.

In the practice of dry-plate photography the following operations are necessary: cleaning the glass, the application of some preliminary coating, to secure adhesion of the film; collodionizing; sensitizing; washing, to remove free nitrate of silver; and, lastly, the application of a preservative, and drying, and, in some cases, the removal, either entirely or in part, of the preservative before drying.

Cleaning the Glass.—Most operators use old collodion for this purpose. A small quantity is poured into the centre of a glass, and rubbed over its surface with a tuft of wool; this, followed by a polish with a leather, usually suffices for new glass. For glass, however, which has once been used a different treatment must be adopted. The old films should be detached, by allowing the glasses to remain for some time in a strong solution of soap and water, or in a moderately strong solution of soda (carbonate). I have used successfully washing powders, some of which consist, apparently, of a mixture of soap with carbonate of soda. The use of soap for washing glass is to be recommended; it has an advantage over alkalies alone, as it causes the water to leave the glass more readily. This may be accounted for on the supposition that the greasy matters adhering to the glass become miscible with the fatty acids of the soap, which render it easier of removal. The glass, when washed and dried, is polished with a leather, and is then ready for the preliminary coating, which may consist of dilute albumen, gelatine, or india-rubber in benzol. The manipulations described so far enter into the practice of most dry-plate photographers.

Doubtless the most tedious operation is polishing the glass. This may be entirely dispensed with, assuming that some preliminary coating is required, and taking care to apply to the wet surface of the glass as the latter leaves the washing water. The object of polishing a glass is to produce a chemically clean surface, or, at least, one as free as possible from nuclei likely to become centres of chemical action; and it is questionable whether the use of a leather does not introduce the evil it is intended to obviate.

The method of cleaning the glass and coating with dilute albumen or gelatine is performed as follows: The glasses, new, or with films and varnish upon them, are placed across each other in a boiling hot solution of soap and soda (if washing powders be used, take an ounce or more to the gallon of water). After an immersion of an hour, take one out, and rub it well on both sides with a bit of rag dipped in powdered chalk; then wash it well under a stream of water from a tap, supporting it the while by the first fingers and thumb of both hands, in such a manner that the hands can be swilled also. The plate is next grasped tightly at one corner, and placed on a pneumatic holder, and held so as to allow the water to drain away, and yet leave the surface evenly wet. If at this stage the water be found to collect in drops on the surface, the glass is insufficiently washed, and must be returned to the soap, and undergo a second rubbing with chalk. I have not found this to be often required, even with varnished glasses.

The next step is the preliminary coating to the wet glass. It may consist of dilute albumen without the addition of any chemical save a few drops of ammonia—

Albumen	1 ounce
Water	6 ounces
Ammonia	60 minims

The ammonia is added to the water, which is then mixed with the albumen. I prefer this order, for I have observed, when albumen is added to water not containing an alkali, that the albumen is often in great part precipitated. After the glass is coated it should be dried artificially. A fresh portion of albumen should be taken for each, otherwise the stock would soon become very dilute; moreover, there is a saving of time by avoiding filtration. The collodionizing and sensitizing are carried out in the usual way.

If the tannin process be followed, Major Russell's directions under the head of collodion and bath should be adhered to. An ordinary porous collodion, containing a little bromide, together with a slightly acid bath, have succeeded for collodio-albumen, which is the process I work. When the plate is taken from the bath it should be drained for a few seconds over a cup, and then washed slightly in a dish, whence it is transferred to the washing tank. This is constructed of wood or tin, well varnished. The size of my tank is twelve inches deep, twenty inches long, and twelve wide; it contains a movable frame, on which the glasses can be placed one against the other, with their prepared sides all facing one end. The frame is nearly the length and width of the interior of the tank, but does not fit the latter so closely as to prevent its being raised occasionally, which produces a current, and makes the washing more effectual. I omitted to mention that along the bottom of the frame is a slip of wood three inches wide, with notches or grooves cut in it; these are to prevent the glasses slipping. A tank of the size I have given will wash conveniently about forty ten by eight plates, supposing the grooves to be half an inch apart. The word "conveniently" applies to the number of plates the tank will hold, and not to the effective washing. Forty plates of the size stated would seriously task the powers of the water, unless, of course, the supply was frequently changed. The glasses may remain in the water for hours without detriment. I once allowed a batch to soak twenty-four hours, taking care to exclude light. They were not affected injuriously.

It will be advisable at this stage to say a few words on the subject of the water. That which has been distilled is best when it can be had. Its use, however, is optional. In some towns in Lancashire—to wit, Manchester and Liverpool—which are supplied with water containing but little chlorides and sulphates, these salts, when present in quantity, affect the sensitiveness. The total amount of chlorine and sulphuric acid existing in the water supplied to the town in which I am living is only about 1·87 grains in a gallon, as appears from an analysis I made last year. I have used the water for all parts of the process in the preparation of tannin and collodio-albumen plates, and have obtained good results.

After washing the plates as above described, they are taken from the tank one at a time, drained, and dipped in the tannin. When the collodio-albumen process is practised, the albumen is applied in the usual manner by means of a beaker.

Beyond what has been said I have little further to add as regards matters unconnected with manipulatory details. The method of working here described I have followed with perfect success during the past summer.

It has been my aim to indicate a general method for the preparation of dry plates which is easy of execution, and involves the expenditure of as little labour and time as possible.

Collodio-albuminists will be interested to know that these operations, up to the point of final sensitizing, need not be conducted in a dark room, unless their collodion contains much bromide. I have prepared plates at midday, working in the centre of a room lighted by one window, which faced the north. I obtained excellent pictures upon them without any disposition to fog. The alkaline method of development was followed.

Many readers will be disposed to question this statement, and ask how the immunity from fog is explained. I am at a loss to account for it, otherwise than on the supposition that the silver salt, which is reduced at the moment the sensitive plate comes from the bath, is reconverted into iodide by the free iodine usually present in the iodized albumen. Admitting this to be the case, the further action of light on the film is prevented by the large excess of alkaline iodides with which it is saturated.

This, I believe, quite accords with theory. Messrs. Petschler and Mann take advantage of the fact that haloid salts, when present in excess on a previously sensitive film, prevent the action of light, in the preparation of their plates, which are insensitive until the salt is removed. For the development of albumen plates I prefer the alkaline method, followed by acid silver; it gives great softness, and brings out the detail well; moreover, it admits of that latitude of exposure so necessary in all dry plate photography.

CLOUDS IN LANDSCAPES.

BY H. T. ANTHONY.

In the Photographic News of May 6th is an article by A. Hubner, on "A Method of Obtaining Natural Clouds in Landscape Pictures." The method described may be possible, but it certainly involves some uncertainty, and seems to be hardly practicable where short exposures are given.

The mechanical contrivances for securing the clouds in a landscape should never be resorted to so long as the same result can be secured by chemical means. In our experience, there is no difficulty in securing cloud effects with the same exposure as for a landscape. It is effected by a peculiar developer, which is made as follows:—

To one ounce of double sulphate of iron and ammonia are added five grains of sulphate of copper. These are then dissolved in water so as to make a solution of thirty grains to the ounce of water. The action of the developer can be modified by the quantity of acetic acid added to it. The development is more or less rapid in proportion as there is less or more acid in combination. This is, of course, generally observable in developing; but in the case of this developer long and slow development does not produce the same kind of effect as is produced by the ordinary developer. One *general* effect of it is to bring out detail of shading; consequently it is suited for landscapes of all kinds, and especially for those where clouds are floating through the sky.—*Photographic Bulletin.*

METHOD OF DETACHING THE COLLODION FILM OF A NEGATIVE FROM THE GLASS PLATE.

BY M. JEANRENAUD.[*]

After fixing and washing, the plate is put into an acidified water bath, containing one part of hydrochloric acid to fifteen parts of water, to loosen the film, in some degree, from the glass; it is then again washed and allowed to dry.

A gelatine solution of the following proportions is made up:—

Gelatine	20 grammes
Water...	100 cub. cents.
Glycerine	3 to 4 ,,

By means of a levelling stand, the plate is placed in a flat, horizontal position, and warmed by placing underneath a vessel of boiling water, the vapour of which is allowed to act upon the collodion; the gelatine solution is then poured upon the collodion film, about seventy-five or eighty cubic centimetres of the liquid sufficing for a plate measuring 21 by 27 centimetres.

The gelatine is allowed to dry perfectly, and a further coating of collodion is then applied to the plate upon the surface of the gelatine. This collodion is of a special character, and composed in the following proportions:—

Alcohol	100 cubic cents.
Ether	200 ,,
Glycerine	5 ,,
Gun-cotton...	5 grammes

As soon as the collodion has dried, so as to form one homogeneous coating with the gelatine, the film is cut through near the margins of the plate, by means of a sharp knife, when the image will be found to leave the glass attached to the combined coatings of gelatine and collodion, which form a stout backing thereto.

It will be perceived that films to be transferred must not be varnished, but simply fixed and washed.

STEREOGRAPHS ON TRANSPARENT, TINTED, ETC., PAPER.

BY PROF. J. TOWLER, M.D.[†]

It is not yet a settled matter, I perceive, what must be the width of the stereograph, for almost every photographer selects his own size, aiming, however, nearly in every case to make it as large as possible. This uncertainty about the size, and the innate tendency to make magnitude the sole aim, must arise from ignorance of the requirements in the case; but this ignorance cannot be charged to the meagreness of instruction on the subject. We have repeatedly expressed our views about this matter, which may be expressed in a few words: "The width of the stereograph must be equal to the distance between the centres of the two eyes."

But since this distance is a variable quantity bordering on two inches and a half, more or less, and seldom exceeding two inches and three-quarters, we may assume, without any great error, the last distance, which will at the same time accommodate those numerous advocates for large productions. Do not think we wish to be dictatorial in this assumption, for, if all the rest will preferably assume two inches and a half for the width of the stereograph, we shall certainly join in the phalanx, and with joy, too, because this distance is nearer what it ought to be. This matter might be settled at the next great national gathering at Cleveland—at least, for Americans, subject, of course, to revision in accordance with the intelligent views of Europeans. We ought to have a standard.

Having assumed two inches and three-quarters for our standard width, we prepare slips of paper of the following dimensions: eleven inches and one-tenth in length by three inches in width; these are cut with clean edges and square corners from the sensitized sheet, each sheet thus yielding twenty-four stereographs.

The lenses on the camera are fixed in their place, also, at the standard distance of three inches and three-quarters from edge to edge, or from centre to centre; and the septum in the camera, which divides it into two halves, is so adjusted as to bring the two pictures into sharp apposition in the middle, without any blank space between them, and without overlapping each other. This adjustment is easily made. There is great economy of time and material by attending to these arrangements at the outset.

The object of preparing the rectangular slips of paper above mentioned is, to be enabled to print the stereographs in such a way as to require no cutting afterwards, and, consequently, no transposition. We are indebted to an Englishman for this discovery, and I thank him heartily for it. Although it is now an old dodge, it will be new to many of our younger practitioners.

Each slip is folded back exactly in the middle, so that the corners are accurately in apposition, the sensitized film being outwards. The slip is now opened again and placed on a clean sheet of paper, the film being downwards. Each half is now folded back on itself, so that the opposite ones meet accurately on the middle crease. A piece of black paper, five and a half inches long by three wide, is inserted between the folds. The paper is now ready to be placed on the negative. The middle crease of the paper corresponds to the middle line between the two pictures on the negative; place the sensitive paper, therefore, on the middle of the negative—that is, at an equal distance from either edge, and with the centre lines accurately overlying each other. Print one side, and then the paper is turned round and placed as before; the other side is then printed. In this way two stereographs are printed on the same sheet; separate them by cutting with a sharp, straight cut through the central line. No transposition is needed, as you will readily see.

The use of the piece of black paper between the folds of the sensitized slip is to prevent the light from acting on the film behind.

Care is required in changing the paper, as soon as one side is printed, round to the opposite side, so as to bring the upper edge of the slip to the same place which it occupied before, and at the same time to make the central line of the negative and that of the sensitive paper coincide. There is no difficulty in doing this, but care is necessary to see that it is done.

The washing, toning, and fixing require no further instruction, and, as the prints are already cut out to the proper size, nothing remains to be done but to mount them in the usual way.

But my principal design in this article is to show you how to make transparent paper stereographs. For this purpose I use the heaviest Marion paper, neither salted nor albuminized. This paper I salt as indicated in some of my previous articles—that is, in the following bath:—

Water	8 ounces
Chloride of ammonium	40 grains
Gelatine	10 ,,
Citric acid	40 ,,
Carbonate of soda	50 ,,

I print by development, because I can get better tones for the purpose by this process. The silver bath I have slightly changed since I wrote last on this subject, substituting nitric acid in a great measure for tartaric acid, and probably I shall dispense with the latter entirely. The solution at present is as follows:—

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[*] *Moniteur de la Photographie.*

[†] *Philadelphia Photographer.*

Nitrate of silver	4 drachms
Water	8 ounces
Nitric acid (sp. gr. 1·2)	1 drachm
Tartaric acid	5 grains

Float the paper on this bath for about one minute, then hang up and dry. Expose until the picture is visible; a longer exposure will do no harm. In the present case, where half the picture is printed separately, the exposure of the two sides must be timed by the watch: in sunlight, one to three minutes each; in a dull, diffused light, from five to eight or ten minutes each.

The mode of development I have changed slightly. Each print, previous to development, is soaked simply in water.

As soon as the paper is moist all through, it is placed on a clean piece of glass, a little larger than the print, and the latter is then moved over the flame of a spirit-lamp, the developer having been previously poured upon the surface of the exposed paper. The developer remains the same—that is:—

Solution of gallic acid (2 grs. to the ounce)	4 drachms
Acetate of lead (30 grains to the ounce)...	5 drops

Acetic acid, enough to clean the milky precipitate.

The development is soon performed, to any amount of opacity, without injuring the whites. Wash the print on both sides under the tap, and then immerse it in the hyposulphite of soda solution, containing one grain of chloride of gold to four ounces of the concentrated fixing solution. The latter can be used several times, taking care to add more hyposulphite of soda from time to time. Wash the prints well, and then dry them, first removing the excess of moisture between folds of blotting-paper, and afterwards by exposure to the air. Trim the edges of the prints if necessary, dry them thoroughly near the fire, and then, placing each print on a piece of good cardboard, pass it two or three times through the rolling-machine. This operation flattens the paper completely, which is quite necessary for the subsequent operation.

Our next operation consists in making the paper transparent, and, at the same time, in causing it to adhere to a piece of glass. For this purpose we require a small iron table, flat on the upper surface, on which is laid a sheet of paper. (The plate may be eight by ten inches.) Beneath the table place two or three small spirit lamps, so as to warm the iron to the proper temperature. On the paper place the cleaned glass which is intended to receive the print. The following balsam is required:—

Canada balsam	5 ounces
Paraffine	2 „
Gum elemi	2 drachms

Melt them together, and keep in stock for future use. Two or three small pieces of this balsam are placed upon the glass, and are spread out, as it melts, with a clean spatula, so as to cover the glass completely. The print (perfectly dry) is now laid upon the balsam, the print side being next to the glass. More balsam is smeared over the back of the paper, which is carefully pressed down. Continue a gentle heat. In about twenty minutes the print will become quite transparent. Rub off all excess of balsam from the back of the print and the front of the plate, and adjust the print to its position. See that all bubbles are removed by pressure. Clean the front of the glass plate with turpentine.

All that now remains to be done is to cover the front and back with the proper shields of black paper, ornamented with gold or otherwise. The transparency thus produced is very beautiful, and requires no further protection; nevertheless, a thin piece of ground-glass is no detriment to it; it is sometimes an improvement. Of course, such transparencies are to be viewed by transmitted light. Landscapes mounted on squares of glass and set in our window-frames produce a very charming effect. In addition to all this, the prints may be coloured to your desire, or touched up with the appropriate tints, naturally before the pictures are made transparent with the balsam. After they are made transparent, the colours are quite indelible.

Furthermore, the transparent prints thus cemented on glass may be backed with tinted paper, by simply gumming the edges of the paper and causing it to adhere to the edges of the glass. For this purpose it is previously moistened uniformly, and, being larger than the glass, the edges admit of being bent over and then gummed on the front edges. The pictures so prepared have a rich appearance when viewed by reflected light.

In my next article I shall give a further application of the transparent or diaphanous picture.

PHOTOGRAPHY AND SURVEYING ON THE CONTINENT.

BY LIEUT. J. WATERHOUSE, R.A.

Photographic Branch.

In his report of the cartographic applications of photography in continental establishments, Lieut. Waterhouse gives some interesting details. The following details are given of the Photographic Branch of the Depot de la Guerre:—

The dark rooms and laboratories are large and commodious, and there are many of them. There is no glass house properly so called, most of the work being done in the open air, but there is a covered room partially glazed, in which work can be carried on in wet weather or in winter.

The arrangements struck me as efficient, though simple and inexpensive, and under suitable circumstances they might be adopted with advantage.

For ordinary working purposes there are two very large cameras, which are placed under a permanent shed on the roof of the building; the stands on which they are placed do not admit of any adjustment in altitude or azimuth, but they run backwards and forwards on rails. The plans are placed in the open air on stands which run on rails, and when not in use are run back into closed wooden sheds to protect them from the weather. Adjoining the roof-terrace is a long room in which is placed a camera on rails, similar to the others; a plan board is fixed on the opposite wall, and a space of about nine feet of the roof above it and of open side is glazed with ground glass; the inside of the room is painted a bright white, and there appeared to be plenty of light. From this room two entrances lead into four spacious dark rooms painted black and lighted with yellow glass windows. They are furnished with tables and large sinks; water is laid on in each room, and the plates are washed with a rose-jet attached to a caoutchouc tube fastened on the tap. The rooms for silver printing are on a lower floor, and in much the same style, but fitted up for their special purpose; on the same floor are the rooms for the officer in charge, store-rooms, plate-racks, &c.

Horizontal baths are used for sensitizing and developing the negatives, and are made of thick sheets of plate glass let into varnished wooden frames. For coating large plates with collodion a very handy instrument is used. The plate is placed on the four wooden arms, and may be moved in any direction on a ball-and-socket joint by means of the long handle.

The processes employed for taking the negatives are very similar to those in use at Southampton. There are, however, two modifications which I consider valuable; these are, the use of solution of gum-arabic as a final wash before the plate is dried and varnished, and the use of dilute acetic acid to clear the plate if it should appear yellow after the action of the hydrosulphate of ammonia.

The following are the formulæ for the solutions used in the prodution of the negatives:—

Cleaning the Glass Plates.

A mixture of tripoli and alcohol, as thick as cream.

Collodion.

(Prepared at the Depot.)

Pyroxyline	30	parts
Alcohol...	1,000	,,
Ether	2,000	,,

To 1,000 parts of the above add—

Iodide cadmium	2	parts
Iodide ammonium	7	,,
Bromide ammonium	½	part
Bromide cadmium	½	,,

Nitrate Bath.

Nitrate of silver	100	parts
Water	1,000	,,

used in a horizontal trough.

Developer.

Protosulphate of iron	70	parts
Acetic acid	70	,,
Alcohol...	40	,,
Water	1,000	,,

used in a horizontal trough.

Fixing.

Cyanide of potassium	3	parts
Water	100	,,

applied after developing.

Intensifying Solution.

Pyrogallic acid...	5	parts
Acetic acid	80	,,
Water	1,000	,,

Re-intensifying Solution.

Bichloride of mercury... ...	300	parts
Water	1,000	,,

Common salt is added *ad libitum* to increase the solubility of the mercury, which it does in a remarkable degree; but I have been told that such a solution is very deleterious to the health of the operators, unless great precautions are taken.

Blackening Solution.

Hydrosulphate of ammonia ...	250	parts
Water	1,000	,,

Should the lines appear yellow or stained after the application of this solution, the plate is washed with very dilute acetic acid, which clears them and restores their transparency, but at the expense of the general density. This would frequently be useful, and save many otherwise good negatives.

After the application of the above the plates are well washed, and a solution of gum-arabic is poured over them, which prevents the film from splitting or peeling off while drying, and also acts as a varnish it only a few prints are required; they are then dried and varnished if necessary.

For holding large plates during the last operations a wooden cross is used, which enables them to be easily handled and washed.

Apparatus.

There are three large cameras, of Paris make, in use; they are on the bellows system, and are fixed on strong firm tables, without any adjustment.

The lenses in general use are Dallmeyer's triplets, but for enlarging a globe lens by Hermagis is used. The advantages of this lens for the purpose are, that it gives a flat field without distortion, includes a very wide angle, and has a short focus.

The support for the plans is entirely of wood. It consists of an ordinary upright easel, with grooves in the sides, in which a frame carrying the board may be raised or lowered, as required, by means of a screw. The plan board is attached to the sliding frame with hinges, which permit motion round a central axis, so that the board may be set perfectly vertical. The plan to be copied is put into an ordinary photographic printing frame, which is clamped firmly to the board. The stand travels on rails.

Printing Process.

The only process I saw in use for printing the photographed maps was a rapid silver-printing process by development. It possesses several advantages over the ordinary silver-printing processes, and is more economical in time and chemicals. I was told that thirty or forty prints could be made in an hour from one negative. Captain de Milly informed me that he could not tell me the details of the process, as it was a secret; but I have every reason to believe that it is very similar to that I saw at Brussels. This process will be of much use on occasions when a silver-printing process must be used, such as when only a few copies of a subject are required as guides for engravers or similar purposes, or when the original is coloured and cannot be reproduced in printing ink; and also in cases when a great number of proofs are required at very short notice.

In the Depot de la Guerre this process is considered to possess several advantages over photo-lithography in rapidity and certainty, and, consequently, as far as I could observe, it is used almost exclusively. I was told that many experiments had been made in photo-lithography, but it was found not to answer the purpose so well as the rapid silver-printing.

A great proportion of the work executed here seemed to consist of enlargements from printed maps; it is not easy to produce such enlargements perfectly sharp, and, therefore, a silver-printing process will give more presentable results than photo-lithography. I saw some results of their experiments in photo-zincography, which were very good, and I am surprised that no process of this sort has been adopted.

I have since learnt that a process of photo-engraving has been adopted and used extensively.

I am indebted to Captain de Milly, the officer in charge of the Photographic Branch, for much useful information and kind assistance.

II.—Application of Photography to Military Surveying.

For some years past some attention has been given in France and Germany to the application of photography to military surveying, and several plans have been proposed for the purpose with more or less success. At present, as far as I could learn, there are two systems worthy of attention; one, the "Planchette Photographique," or Photographic Plane Table, an invention of the late M. Auguste Chevallier, of Paris; the other a more simple system, published by Colonel Laussedat, of the French Engineers, who proposed to make use of the ordinary photographic apparatus, modified by the addition of an instrument for measuring angles. A similar method has been employed by Herr Meydenbauer, an architect of Berlin, who has published a pamphlet on the subject. Several surveys have been made by both methods, and great exactitude and correctness are claimed for them by those who have actually executed surveys; but, at the same time, officers of experience told me that, though very correct in theory, the methods were not considered practical. I should have liked to have seen an experiment in the field with both methods compared with a survey executed in the ordinary manner, but the opportunity did not offer, as M. Chevallier died at Toulon during the time I was at Paris, and Herr Meydenbauer was not in Berlin at the time of my visit.

The advantages of the photographic over the ordinary methods of surveying appear to be—

1. That instead of obtaining at each observation one point only, an almost infinite number of points are obtained, many of which can be used, and thus, fewer observations being required, the work is very much shortened

2. The great advantage they possess is, that all errors of reading and noting the observations are eliminated. The photographs accurately register the images of all the objects visible from the point of station, none can be left out, and all are in their proper relative position. The distortion incidental to the use of lenses can be corrected by calculation, and with good instruments would not cause greater

errors than are caused by the difficulty of reading angles *exactly* with the ordinary instruments.

3. By these methods one operation serves both for the planimetry and for the levelling.

4. In the system of Laussedat the photographs obtained, being taken in the usual way, can be used as ordinary views to give a good idea of the nature of the ground and the general appearance of the country. This use cannot well be made of the photographs obtained by Chevallier's system, because the views are in the form of sectors of circles, and the images of objects are distorted; but by practice, however, many useful indications may be obtained even from these.

The disadvantages are only those incidental to the imperfection of photographic lenses and apparatus, and to the difficulties attending their use. If a lens could be obtained which could be depended on to give a geometrically true perspective view, the system of Laussedat would be perfect. Dallmeyer's "*Rectilinear*," Ross' "*Doublet*," Steinheil's "*Aplanatic*," and Busch's "*Pantascope*," appear to be the best lenses for the purpose, but I cannot speak as to their relative merits.

Correspondence.

RAPID SEA VIEWS AND MOONLIGHT PICTURES.

Sir,—From long experience I am always led to expect the first intimation of any novelty in our art in the Photographic News, introduced either by yourself or your correspondents abroad or at home; but I had reason to fear that the artistic novelty of the year—Mr. Robinson's Moon—would not reach you.

I saw this picture in the hands of a friend some months ago, and was told that it would not be shown till the November Exhibition, and that only one or two copies had been distributed to intimate friends. However, I am glad that Messrs. Robinson and Cherrill have sent you a copy, and invited discussion, to which I beg now to add my mite.

First, then, as to the morality of keeping the process by which the picture was taken a secret. Years ago Mr. Robinson was so very open and candid about every method he employed, so ready to answer the questions of his less informed brethren on any subject relating to art or photography, that he called down upon himself the censure of those interested in teaching, for giving lessons gratis; but now he has developed such a talent for mystery, that he would be a credit to a Wizard of the North or any other point of the compass.

But I feel convinced that Mr. Robinson's secret is so valuable that he will not be wicked enough to keep it to himself, or let it die with him, but will, in his own good time, tell us all about it. This, together with his own suggestion, that a discussion is of more use than a formula, are the only means I have of excusing his present reticence.

And now with regard to the method by which this picture was produced. On this subject all we can do is to speculate, but I think we have some data upon which to base our speculations. You yourself, sir, have dropped a hint in your note to the letter in your last, announcing the picture, which, I think, is well worth following up. You suggest that it possibly might have been done by the light of declining day, with the moon visible. The position of the moon favours this supposition; but even in this case the photographer must have had some other aid than the ordinary chemicals and apparatus. I am strengthened in this hypothesis by the fact that accompanying the copy of the moon picture I saw was a collection of sea views by the same hand, as totally different from other photographs of the sea and sky as light is from dark, and this comparison or contrast exactly expresses the difference. Most other attempts at large photographs of the sea have been dark and heavy in effect, as if taken at night; but the sea pieces by Mr. Robinson I am referring to are evidently from fully exposed negatives; they are full of light, air, and space, and yet the subjects are not skies and distant seas only, to which a few seconds' exposure could be given without any visible bad effect, but were all of near waves, of immense size, exhibiting all the dash and fury of nature; and yet the definition is perfect, even of the foam on the crests of the waves. The result to which I am leading is, that those pictures must have been taken, not what is called instantaneously, which may mean any time within one or two seconds, but in that small fraction of a second to which it is almost impossible to give expression in words.

Now, sir, I come to my point. I think I have proved that these pictures could not have been done in the ordinary manner with ordinary materials; that they exhibit more effect of exposure, while they have in fact had less, than other pictures; in short, that a process exists so infinitely more sensitive than that in common use, that it enables the discoverer, not only to obtain exquisite representations of trembling waves in daylight, but to obtain that which has hitherto been impossible, pictures of flying gulls and moonlit seas.

The question then arises, what difference is there between the materials employed by Mr. Robinson and those in common use? We may fairly assume that he is not an optician—he is not mechanical enough for that, so we may dismiss the idea that he has invented some miraculous lens. We have, therefore, now driven the secret into a corner, and are constrained to believe that it must be in the chemicals—the collodion, bath, or developer, or perhaps in all together. And here, I am sorry to confess, I find myself at fault. I have no theory to offer, except that it may be in the recollection of your readers that some time ago Mr. Bovey wrote some articles in the News, the pith of which was, that a grain of gallic acid, or some kindred substance, in a large quantity of collodion, had a marvellous effect in lessening exposure. Is it possible that Mr. Robinson has been quietly working in this direction, and that he has succeeded in bringing the process to perfection? A. F. H.

Liverpool, August 30th, 1870.

TUNICARE.

Dear Sir,—With your permission I cannot let Mr. Gulliver's letter in this week's News go unanswered. He attributes his foggy plates to the use of tunicare. With all due deference to his opinion, I must say that it is impossible that tunicare could be the cause. Tunicare, as it is used on the plates, is very dilute, and when the plate is coated with collodion there would be but little chance of the bath coming in contact with the tunicare, even if it were injurious; but it is not. He may, for experiment, add (say) half a drachm of tunicare to his bath, and he will find that it will not cause fog or any other disorder.

I am in constant receipt of testimonials, and from no one have I heard a hint of fog.—I am, dear sir, yours truly,

August 31st, 1870. G. Jones.

PS. I see a great deal said about a varnish that will bear retouching. I will send you this week a bottle of varnish that I use, if you will please give it a trial.

Proceedings of Societies.

Liverpool Amateur Photographic Association.

The usual monthly meeting of this Association was held on Tuesday, the 23rd ult., at the Free Library, William Brown Street, Mr. John Henderson, the President, occupying the chair.

The minutes of the former meeting were read and confirmed.

The request of the local committee of the British Association for illustrative photographs or objects of special interest for the *soiree* to be given on the 20th instant was then fully considered, and it was finally resolved, with but one dissentient, that members be requested to send their contributions to the Secretary, at Mr. Forrest's, Lime Street, before the 7th September, for inspection by the Council.

The subject of holding a photographic conference was discussed, but it was not thought desirable to take any steps towards making arrangements for one.

It was left to the Secretary to arrange, if possible, with some one of the distinguished visitors to read a paper at a meeting of this Association, to be held expressly to suit his convenience.

It was agreed to have an excursion to Marple on Monday, the 5th September. It was also arranged to sell all surplus presentation prints.

The Rev. T. B. Banner mentioned having lately used some

Hill Norris' plates six years old, which produced negatives, though with a large consumption of material, in half-an-hour. A fresh collodio-bromide plate, he said, was developed in a couple of minutes.

The Council were requested to make the requisite selection of a presentation print for the present year, to be issued at the last meeting of the session.

On the motion of Mr. J. Leader Williams, seconded by Mr. Cook, it was resolved that there be a photographic competition of pictures taken in 1870; the producer of the best of the under-named sets to receive two of the others shown in the competition, the second best the remainder:—

Stereo, and not exceeding	... 5× 4, six in number	
5×4, up to	... 8× 5, six	,,
8×5, ,, ...	..10× 8, four	,,
10×8, ,, ...	..12×10, three	,,

The prints to be mounted and exhibited at the first meeting in January next.

Mr. Murray showed a few prints of Lymm and Warburton.

Talk in the Studio.

Photography and War.—We understand that the staff of the Crown Prince of Prussia is attended by a trained body of photographers, whose services are rendered available in securing plans, views, and other topographical aids to the prosecution of the campaign. The rapidity with which such photographs can be secured and multiplied has doubtless been found valuable to the officers conducting troops and executing manœuvres in an unfamiliar country.

Bi-Medallion Portraits.—A correspondent (Mr. H. C. Lee, of Blaenavon) sends an example of a style of portraiture which he says he has found acceptable to his customers. It consists of a couple of oval medallions side by side and in contact, one containing the portrait of a gentleman, and the other of a lady, presumably husband and wife. He says the plan enables him "to get a more satisfactory likeness of both the sitters, and, at the same, saves all trouble of getting a satisfactory pose." He adds: "I also do them for single sitters, giving them two views of the face. If you think, sir, they are worthy of notice, and any of your readers wish to know my mode of producing them, I shall be most happy to supply all information on the subject in another letter to you." We shall be happy to hear further particulars from our correspondent.

More Moonlight Photographs.—Since writing "Critical Notices" in the present number, we have received another moonlight picture from Mr. Whitham, of Hollingsworth Lake. It is a nine by seven picture of water, with distant coast, landing-stairs and steamer in the foreground; and a cloudy sky, with a full moon, the latter having somewhat blurred edges. The track of light shining on the water is more brilliant than the moon itself, a circumstance by no means uncommon in nature, the proximity of the reflection, and the mode in which it is broken and repeated by moving water, often giving that effect. The picture is, on the whole, very effective.

"Let Me See the Face!" A good story is told by an American portraitist. He says:—"For nearly eighteen years I have seen the shades and lights, from the old silver plates of other days till the benign present. The other day my mind was called from the present and sent back to old times by an enquiry propounded in a harsh, stentorian voice, as I sat at my table 'touching up.' A big hulk stalked heavily in, exclaiming, '*Take picters here?*' 'Yes, sir,' I replied; 'what would you like to have?' 'Do ye taik 'em *Daggery* or *Amery?*' Smiling, I replied, 'We have the photograph process; one calculated to "set off" the human phiz to the best possible advantage.' 'No sir; I don't want any stilish picter; I jist want my *nateral feters pictered off!*' My subject took the chair, and put his forehead against the head rest. I could not resist it, and took him an ironclad view of his dishevelled locks, brought it out, and showed him a rear view. He looked intently for a moment, drew a breath, and said, 'I s'pose that is a good picter of my back; now please turn the picter over, and *let me see the face!*'" The narrator, writing in our Philadelphia contemporary, asks: "Can any of our friends beat that for verdancy? If so, take up your pen."

The Practice of "Lichtdruck" Printing.—It is said that when an enquiry was made in the Berlin Society for the Advancement of Photography, if any of the mechanical printing processes were practised in the Berlin *ateliers*, and if the new invention is learned by foreign photographers, the following answer was given: "According to the best of our knowledge the process is only practised in those establishments which teach the same." The second point of the question the Society did not feel competent to answer. From this it would appear that the "Lichtdruck" printing, as practised at Berlin, is not yet commercially perfect. Albert's, Edwards', and some others are, therefore, more advanced.

A Parrot in the Studio.—Our Philadelphia contemporary says: "Messrs. Moore Bros., Springfield, Mass., use a parrot when taking pictures of children. The pose is arranged, Polly is perched on the finger of the operator, held up to the view of the child, and the removal of the lens cap or cloth being the signal, she flaps her wings just long enough for the exposure. She hardly ever fails to attract and get a good picture. She has thus officiated for about seven years. We saw her."

Photo-Zincographs of National Records.—The thirty-first annual report of the Deputy Keeper of Public Records states that further successful photographic facsimiles have been produced and multiplied by zincography of many important national documents. We shall refer to them more fully on another occasion.

Chloral in Photography.—The *Photographische Archiv* says, that to freshly prepared and slightly coloured bromo-iodized collodion one per cent. of hydrate of chloral was added. With a neutral silver bath it gave a good white film. The developer consisted of sulphate of iron and acetic acid. The plates were considerably more sensitive than those prepared without the chloral hydrate. The plates worked very clean.

Photographs of the Sun.—Professor Winlock (says *Nature*) is now engaged in photographing the sun on a plan which, so far as we know, has not before been put into practice. He uses a single lens object-glass (4½ inches diameter, 40 feet focal length) of crown glass, made by Clark, and corrected for spherical aberration by means of an artificial star of homogeneous (sodium) light, in the focus of a 5-inch collimator. The image of the sun is 4½ inches in diameter. The tube of the telescope points to the north, and the image of the sun is thrown in by means of a reflector of plate-glass. This glass is *not* roughened or blackened on one side, because, when that was done, the heat of the sun distorted the plane surface. The slit is at the object-glass end of the telescope, and that position has the advantage, that when it is thrown across no dust is shaken down on to the plate, as is apt to happen in the usual way of working. It is Mr. Winlock's intention to photograph the sun every fair day now. It seems also probable that this mode of photographing might be of advantage for the partial phases of an eclipse.

Avoid Sulphides in the Operating Room.—The *Philadelphia Photographer* says:—"A few weeks ago we saw a good deal of trouble caused in the following way: The waste solutions of a large establishment were thrown into a barrel, and precipitated with sulphuret of potassium in the room where the paper was silvered and dried. The fumes became very strong, and so affected the silvered paper at times as to entirely spoil it by large stains and markings. Take warning!"

Keeping the Printing Bath from Discolouration.—A correspondent writes:—"Much has been said about clearing the printing bath, which at one time gave me very much trouble; but for months past I have neither added kaolin, sodium, nor anything recommended for such purpose. I simply keep my bath in daylight, and I always find it perfectly clear. My printing bath is the one recommended by Mr. Bovey, containing nitrate of soda. I also use Mr. Bovey's paper."

Varnish for Dishes, &c.—A correspondent of our Philadelphia contemporary says: "I send you a recipe I have used for over three years for coating tin dishes, which I use for silvering paper, salting, toning, and washing. I have five tin dishes 30 by 24 inches, and 3 inches deep, which cost under ten dollars, while a porcelain of the same size would have cost me twelve dollars, so I got my set for less than the cost of one. I have but one fault to find with it, and that is, if the dishes are in constant use it is all right, but if permitted to stand unused for a length of time it cracks, and I cannot prevent it:—

Shellac (orange)	3 ounces
Gum sandarac	3 ,,
Balsam of fir	1 ounce
Alcohol	16 ounces.

Dissolve by heat, and add, as it is used, enough ground slate (such as is used for plastic slate roofing) to make a tolerably thick paint. Apply with a flat brush; coat three times, and rub smooth with coarse sand-paper. Pure nitric acid has no effect on this surface. I have used a washing-tray for months without any apparent change. If any crack appears, thoroughly dry the dish, and give it another coat, or the whole can be chipped off and a new dish made as good as at first. I strengthen my dishes by fixing them on a wooden frame."

To Correspondents.

J. T.—We do not know of any examples of the "Rembrandt" style of portraiture which have been published in this country. The *Philadelphia Photographer* for June and July, both of which contain fine examples of this style, may be obtained by order, through Trubner, of Paternoster Row; but whether any copies are kept on sale we do not know. The price in America is half a dollar, equivalent to two shillings and a penny.

W. H. J.—We have not received from Mr. Gordon any further details of experiments with acetate of morphia in dry plate work. He has not been actively engaged in such experiment, we believe, during this summer. 2. We hope to receive a communication from M. de Constant on dry plate work shortly. 3. Much depends on the skill and experience of the manipulator. On the whole we think that better enlarged results would be produced by collodion printing and transferring to paper. Perhaps, if many copies are required, the production of an enlarged negative at once, and printing from it direct, would be the least trouble.

E. H. B. (Canterbury).—We have never experimented ourselves to determine how long Liverpool plates may be kept between exposure and development; but we have no doubt whatever that they may be kept a fortnight safely. It is wise, in cases where plates have to be kept, to give them a full exposure.

Juvenis.—We are not sure what you mean by "flexible glass." There is no such thing really, although several things may have been so styled. Plates of mica or talc are transparent and flexible, and they are also insoluble, and thin plates possess a fair amount of firmness or absence of limpness. Sheets of gelatine are transparent and flexible, but are affected by moisture. Sheets of leather collodion, which were some time ago introduced by Marion and Co., of Soho Square, were sometimes called flexible glass. Probably your photographic dealer could get you any of these.

A. Whitham.—We perfectly appreciate the motive, and always hail with satisfaction any step which tends to simplify and popularize methods of permanent printing. Thanks for the moonlight picture. What method is employed in producing it? We send the photographs—please acknowledge receipt.

Nil Desperandum.—On looking through the back numbers of the Photographic News you possess, or the indexes, you will find many articles on the subject of enlargement in the two last volumes. We may especially mention articles on p. 54 and p. 460 in Volume XII., and on p. 373 Volume XIII. Our Year-Book for 1869 contains a useful article, with complete summary of conditions, on p. 90. It is impossible in this column to give general and complete instructions for enlarging, but we shall have pleasure in giving you hints in regard to any special difficulty, if you state particulars.

One who Tries.—When a lens is sent out by the optician it is presumably in a proper state, and any alteration in the relative position of the component parts will deteriorate its action. By separating the lenses further apart the field of illumination is lessened, and the definition is deteriorated. 2. It is purely a practical question, to be ascertained by trying. 3. Many practical photographers are agreed that the practice of keeping a saturated solution of sulphate of iron, to be diluted as required in preparing a developer, is an advantage. You will form a saturated solution by adding twelve ounces of the sulphate of iron to a pint of water.

Z. D. (Swindon).—A single lens always gives curved marginal lines in buildings. A portrait lens with central stop properly placed will give straight lines. The triple, rectilinear, and doublet lenses all give straight lines. 2. Vulcanized india-rubber should not come into contact with the silver solution, as it would contaminate it with sulphur. It may be used for the cover of a water-tight bath, if you line the surface in contact with the solution with a piece of thin sheet gutta-percha or pure india-rubber; otherwise a piece of pure india-rubber is best. 3. The wood of which the carriers of your camera are formed should be well varnished with shellac varnish, which is easily made by dissolving shellac in methylated spirit or wood naphtha, about a drachm in an ounce.

H. C.—The yellow spot is caused by imperfect fixation at the point, most probably due to the formation of a minute bubble on the surface in the fixing bath, the bubble preventing the action of the hypo. 2. The coffee dry process is simple and efficient; but it is not the most rapid process; so far as we know, the gum-gallic process is more rapid. The preservative consists of—

Ground coffee	45 grains
Sugar (refined)	22 ,,
Water	1 ounce

Pour the water, boiling, upon the sugar and coffee, bottle, and strain when required for use. A mixture of coffee and gum gives a more sensitive plate. An article on the subject is promised by M. de Constant shortly.

M. M. asks if any of our architectural readers can give him a good design for a small and cheap studio for card portrait work? He has a space of sixty feet long by thirteen feet wide, with light from N.E. and N.W. We do not see how any better design can be used, under such circumstances, than a simple rectangular room twenty-six feet by twelve feet, with five or six feet opaque at each end, sides, and roof.

H. C. Lee.—Very pretty. Thanks. We notice in another column.

X. Y. Z.—Your question as to what is required for enlarging by artificial light, and what the cost of the requisites would be, is much too indefinite for a satisfactory answer. There are various methods of enlarging by means of artificial light. There is the compact and simple method by means of the magnesium light, with the apparatus sold by Mr. Solomon, which is, perhaps, the neatest and cheapest for many operations, although the magnesium is somewhat costly; there is the method by the electric light; the method by the ordinary oxyhydrogen light; and the method by Dr. Van Monckhoven's modification of the oxyhydrogen light. Our last two volumes contain several articles on these various methods. We can only recommend you to read the articles, and decide which is the best suited to your special requirements.

H. H. P.—The film of iodide of silver having been eaten off whilst the plate was in the bath would indicate that you were using a new strong bath to which sufficient iodide of silver had not been added. The loss of intensity after fixing with cyanide indicates either that the cyanide solution is too strong, or that the collodion is imperfect, being either old and partly decomposed, or made from an unsuitable sample of soluble cotton. Probably a somewhat old and decomposed collodion is the cause. 2. The place for a studio is somewhat circumscribed, but much depends on the height of the adjoining houses, and how far a free expanse of light from the sky would reach the sitter. Place yourself in the spot to be occupied by the sitter, and examine the light. All the sky you can see without lifting up your head or turning it round will yield light to the sitter; or try a portrait with a sitter in the open space. If that is successful, you can build a studio to secure all the effective light there is now in the yard. That will be a more satisfactory guide than an opinion expressed without seeing the place.

No Name.—A correspondent, who uses no signature, asks how enlarged developed prints are toned. As a rule, developed prints require no toning; but they may, after very thorough washing, be toned in a gold bath. 2. The best method of keeping the image on the surface in all developed prints consists in using a hard sized old paper; in using gelatine or a similar body in the salting solution; in applying that solution rapidly, by brushing or floating; and in floating on the silver bath a short time. 3. Marble markings in developed prints may be due to several causes: imperfect application of salting and silver solutions; the use of a silver solution too weak, allowing the developer to remain without motion on the surface; the quality of the paper, &c. The addition of acetic acid to the developer is an aid to cleanliness.

X. Y. Z. No. 2.—It is impossible to answer which is the best and most easily acquired dry process. Almost every dry-plate worker will tell you that his especial process is easiest and best, and to him it is so. Besides, much depends upon what conditions are required, whether keeping qualities or rapidity. The gum-gallic process of Mr. Gordon is not difficult, is very rapid, and keeps well. The coffee process is simpler, and gives good results, but is less sensitive. Nothing can exceed, for certainty and excellence, the collodio-albumen process, but a double process of preparation is involved. The Fothergill process is simple and excellent, and so are many more. 2. We should not recommend any dry process where the wet process can be employed. 3. See answer to H. C. above. 4. Acetate of morphine may be dissolved at the rate of thirty grains in an ounce of water; in the morphine process you only require one grain in an ounce. If this does not dissolve, you have probably got the wrong material. 5. The character of crystals depends much upon the quantity of material under treatment. From your description, there is no reason to suppose anything wrong with yours. Probably they contain excess of nitric acid, and will be improved by redissolving in distilled water and then re-crystallizing.

Eugene Ogier.—Thanks for further examples of your moonlight work. They are extremely interesting.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 627.—*September* 9, 1870.

CONTENTS.

PAGE

Acceleration of Exposures by Light in the Camera ... 421
A New Size for Portraits ... 422
What is Lichtdruck? By H. Baden Pritchard ... 423
Photographic Secrets. By W. T. Bovey ... 423
American Correspondence ... 424
The Royal Cornwall Polytechnic Society—Prizes ... 425
On the Utilization of Old Negative Baths for Printing. By David Duncan ... 426
Photographic Researches of the Sun ... 426
Pure Water and the Nitrate Bath. By Elbert Anderson ... 427

PAGE

Bichloride of Mercury Gelatino-iron Solution for Intensifying. By Jex Bardwell ... 428
A Permanent Toning Bath. By August Thiry ... 428
Prevention of Blistering and Slipping in Dry-plate Work. By M. Carey Lea ... 429
Recent Patents ... 429
Correspondence.—Photography by Moonlight ... 430
Talk in the Studio ... 431
To Correspondents ... 432
Photographs Registered ... 432

ACCELERATION OF EXPOSURES BY LIGHT IN THE CAMERA.

The theory of M. Becquerel as to the influence of the red and yellow rays in continuing the chemical action set up by the blue ray has recently been revived by M. Bazin, and brought before the French Society; and he proposes to utilize it so as to materially shorten exposures by admitting into the camera red or yellow light in addition to that passing through the lens and forming the image. We allow a correspondent, who asks our attention to the subject, to explain the application of Becquerel's theory now proposed:—"M. Bazin makes four holes in the front of the camera, and fits them with glass coloured by a solution of carmine in ammonia, behind which he places another piece of unpolished glass. These holes are uncovered at the same time as the lens, so that the red light falls upon the plate simultaneously with the image through the lens. According to the statement of the author, the blacks and high lights are by this means much softened, and the half tones greatly improved. The same effect is said to be produced if the sensitized plate be exposed to red light, either before or after the picture be taken; in the latter case, of course, before the image is developed. This is a matter on which it is impossible to express an opinion without experiments, and we must content ourselves by calling the notice of our photographic readers to the discovery. I may mention that M. Bazin has tried other colours, but finds red to be the only one which gives satisfactory results."

A correspondent asks us if this theory of the continuing action of the red ray is well established; and, if so, how it is that it has never before had such obvious application as that now pointed out by M. Bazin. We can simply answer, that although the theory excited much attention and interest at the time it was propounded, and M. Claudet made some interesting experiments in connection therewith, it was never, so far as we know, fully investigated by practical men. Without denying its possible truth, we must confess that we do not think that it is a well-established theory; and that simply because we think the alleged facts can be explained on other and less recondite grounds. We may say, at the outset, that we never look for an occult or remote explanation of phenomena which can be fairly referred to simple or familiar causes. It appears to us, the accelerating action supposed to be the result of the red ray is simply due to the traces of white or actinic light which pass through the red medium, and produce increased action in a manner similar to the weak diffused light which has repeatedly been proposed for shortening exposures in the camera.

That exposures in the camera may be shortened by supplementing the light of the image passing through the lens by a slight general action of light on the sensitive plate there can be little doubt, although, singularly enough, this fact has hitherto received but little general attention or application, notwithstanding that the idea is a very old one. We have before referred to the fact that old Daguerreotypists habitually exposed the prepared plate for a brief moment to diffused light when a very short exposure in the camera was imperative. White-lined cameras to secure a similar end were proposed in the early days of the art. Three or four years ago Mr. Gage, an experienced practical photographer in America, secured a patent for another method of applying the same idea, the sensitive plate, before or after exposure in the camera, being submitted, for a few moments, to the weak action of light reflected from a dead black surface. Nearly twelve months ago Mr. Blair, starting on independent grounds, suggested the use of a white lining to the camera as accelerating the production of a picture, and, for the first time, supplied *rationale* of the operation. As we at the time stated, in summarizing Mr. Blair's views, his suggestton was, that a certain amount of the initial force of light is expended, not in producing an actual image, but in overcoming a certain degree of *vis inertiæ*. It is well known that the degree of force necessary to keep a body in a state of motion once attained is less than the force required to commence that motion when the body is in a state of rest. Suppose, then, for illustration's sake, the sensitive surface to consist of molecules at rest, and the image to be formed by bringing them into motion by the action of light, the idea is, that a certain amount of light action would be expended in the initial effort to overcome the state of rest before an actual result capable of being utilized was produced; that if the exposure were stopped just when sufficient light action had been expended to disturb the state of rest, and no more, the molecules would resume their original position, and a developer would produce no effect on the plate. If this be so before exposure, sufficient light might be admitted to the plate to overcome the *vis inertiæ* of the molecules, and the state of rest being overcome, then all the action of light in the camera is expended on the actual production of an image. As the amount of light necessary to produce this initial effect on the sensitive surface would be insufficient to produce or determine any actual reduction without the further action of light, no appreciable injury to the shadows would ensue; all parts of the plate upon which light has not acted in the camera would remain as free from deposit as they do under ordinary working conditions.

The theory is, in brief, that weak diffused light, without being sufficiently active to originate action on a sensitive surface itself, may increase the effect of other light actually at work. This is precisely, we believe, what the red or continuating rays of Becquerel effected, and what M. Bazin has recently found effected by light passing through a solution of carmine. M. Vidal recently reported to the Photographic Society of Marseilles an interesting experiment in illustration of the action of continuating rays. A piece of perfectly white silvered paper was placed in a copying-frame, covered one half with a piece of black paper, and exposed to the light for two or three seconds, or even a shorter time. The unprotected part has taken so slight a tinge that it only can be noticed by comparison with the white paper. On the partially affected paper a piece of yellow glass was placed in such a manner as to cover one-half of the tinged as well as one-half of the white part. The frame was again exposed, and a few minutes afterward the effect was examined. The previously white paper did not show the least effect of the light, while in the previously tinged part the action had been going on, so that one part remained nearly white, while the other had become a dark grey. This experiment admirably illustrates Mr. Blair's theory. On the portion of the paper which had been perfectly protected from light no action was set up by the feeble traces of actinic light passing through the yellow glass; but where the full daylight had once set up an action, scarcely traceable by the tint, the light passing through the yellow glass was sufficient to continue the action very definitely.

An experiment of our own bears out, so far as it goes, the same view, but, being made on chloride of silver and a direct image, it is not conclusive as to the reactions, under similar circumstances, with a latent image and iodide of silver. We submitted a lightly printed image on collodio-chloride of silver paper, which had been carefully kept from diffused light, to the action of light passing through deep orange glass; all the white margin had passed to a very deep bronze before any appreciable change was manifest in the picture. Eventually, the action of light on the image became apparent, and, curiously enough, was most marked in the light and middle tints of the image. The deep shadows were not appreciably deeper, the pure lights not degraded, but the delicate half-tones, before scarcely perceptible, were now distinctly brought out, and, as it were, developed in greater ratio than the other parts of the image. This is precisely what we have found to be the case with a wet collodion plate exposed for a few moments, after leaving the camera, to the weak light reflected from black cloth, when reporting on Mr. Gage's proposal for shortening exposures and securing harmony. We then reported, three years ago, that it was the middle tints in the picture which were most affected by the treatment with light; there was a considerable increase in the development of the half-tone, without much change in the highest lights or in the deepest shadows.

We notice that, in a recent article, Mr. Carey Lea, after repeating M. Bazin's experiments, comes to the conclusion that the red light does possess special advantages of its own. Mr. Lea is at all times a careful and trustworthy observer, and his opinion is therefore entitled to consideration. In all our own experiments of this kind, however, we have been compelled to come to the conviction that the acceleration obtained is simply due to weak actinic light accompanying the yellow or red light, and the advantage which red or yellow media possess consists chiefly in the fact that they may be made to admit a measured or limited amount of actinic light without readily admitting excess, and hence they possibly afford a more convenient means of utilizing weak diffused light than is found in white linings to the camera, exposure to black cloth, or any of the methods which have, from time to time, been proposed for securing the same end.

Since writing the above, we have referred to "Hunt's Researches on Light," for the purpose of verifying some points, and we meet with unexpected confirmation of our own views in those of Mr. Hunt himself, the fact that he volunteered any explanation of Becquerel's facts on other than Becquerel's own theory having escaped our attention. After referring to Moser's experiments in verification of Becquerel's theory, he says:—"Moser, indeed, admits that some blue and violet rays penetrated the red glasses he used in his experiments, therefore the only effect which, as I conceive it, the red medium produced, was to retard the change over the undisturbed parts of the plate, whilst a sufficient quantity of the most refrangible and extra spectral chemical rays had passed the glass, to continue the change which had been already begun." He further says that it appears to him that white light passing the red or yellow glasses carried on rapidly the action previously set up by the chemical rays, and gradually produced a change in the parts which previously had had no exposure at all. This explanation, given by Robert Hunt fifteen years ago, it appears to us, quite meets the case as it stood then and stands now.

A NEW SIZE FOR PORTRAITS.

A correspondent of the *Philadelphia Photographer* proposes, in the September number, the introduction of a new size for portraits, "to meet the wants of those wishing a little larger picture than the little carte, yet not so large as the cabinet." He says:—"I think it certainly would take if once introduced, for any gallery that can produce the little carte can make this new size without much extra outlay; and there are few customers but what would prefer a little larger picture than the old carte, which is too small for anything except a vignetted head. The difference in the price per dozen will not be so great as to deter the customer. I think it would take the place of the little carte when once started.

"The size of the new card should be about 3¼ inches wide by 5 inches long, outside measure. The above proportion would be neat and sufficiently portable for transmission through the mail in an envelope. A half plate will be large enough for the negative, and a good half lens will do the work. For double negatives, a ¼ plate will make two figures, or an $\frac{8}{10}$ four figures. Albumen paper will cut up right for them without waste. Few extras are required in the way of apparatus. So that all photographers and ferrotypers can give the size a push together, which was not the case with the cabinet size to so great an extent. The cards and mats for this size should be neatly gotten up, both tinted and white. For a name I would suggest *Bon Ton Cartes*, as they approach that size ferrotype nearer than any other.

"Please let me know what you think of the matter."

Our *confrere* approves of the samples forwarded to him, and thinks that as the cabinet size is now well established, an opening may exist for another novelty. A question of this kind is essentially one for the decision of portraitists generally; but we cannot help feeling a doubt of the expediency of attempting to introduce another size between those already accepted in the carte and cabinet. These two are sufficiently wide apart to claim distinct positions, but it appears doubtful whether any result but confusion will arise by introducing a size between. We remember that just at the time the cabinet was proposed, Mr. Notman, of Montreal, had projected and commenced to introduce a size as nearly as possible of the proportions now proposed; but feeling that it would interfere with the cabinet size, which gave promise of acquiring universality, he abandoned his own size to adopt the cabinet, which we were then pressing on the attention of photographers. As general, if not universal, adoption is of importance in relation to sizes, the subject should be well ventilated and considered before it can be wise for individuals to employ the new size, which, if not accepted generally, would fail to find suitable album space, and would in such case receive but little favour from the public. We shall be glad to hear the opinion of any of our readers concerned.

WHAT IS LICHTDRUCK?

BY H. BADEN PRITCHARD.

It is a matter of surprise to many of us that the Tessie du Motay process—which, we are told, is the origin of Lichtdruck—should not have been more thoroughly developed and improved by its originators. Those who had the opportunity of inspecting the results of its capabilities in the early part of 1867, when the details of the invention were first published, could not have failed to have been struck with the very promising character of the proof prints then shown, and to have noticed the very marked superiority which the same enjoyed over the general run of photo-lithographs. Its success as a mechanical printing process was, indeed, proclaimed on every hand, and a brilliant career predicted for it, provided the durability of the printing blocks employed could but be insured; but herein lay the great difficulty. After a few score of prints had been pulled off, the plates invariably gave way, and, with the exercise of the greatest skill and caution, one hundred was the highest number of perfect impressions obtainable from a single block.

The fault in the process—which the inventors were, unfortunately, unable to discover, or, possibly, to remedy—becomes at once apparent on carefully comparing the *modus operandi* of M. Tessie du Motay with that of M. Albert. Two essential principles are the basis of these photo-lithographic processes. The first is that pointed out by Pretsch and Poitevin; viz., the property of bichromated gelatine or other organic substance, after exposure under a negative, to repel or attract in parts a greasy ink rolled over its surface; and the second, more practical in its character, consists in he creation of an inter-layer of a non-absorbent nature between the printing surface and the support upon which this rests. Tessie du Motay certainly made a very important discovery when he found out that an intermediate layer was a *sine qua non* to the elaboration of any good printing process of this nature; and, moreover, that such layer must, if possible, be of a firm, non-absorbent character. This condition once complied with, the beautiful hygroscopic properties of the solarized gelatine could be taken full advantage of, but in no other way; and a glance back at his method of proceeding will at once show how fully convinced he was of this fact. He objected, with right, to the use both of metal and stone for printing surfaces, as neither of these materials, even when grained in the finest manner, yielded a sufficiently delicate impression. He chose, instead, an organic compound, consisting of a mixture of isinglass, gelatine, and gum, the same being supported by a well level'ed copper-plate. This copper-plate played an important rôle in the process, for, by using, in conjunction with the trichromate (employed instead of bichromate, as being more suitable when thick surfaces are to be sensitized), a reducing salt of some kind, a reaction was brought about upon the organic compound, rendering that portion of it in contact with the metal *perfectly insoluble*, a result accelerated by warming the film prior to its being placed upon the plate. Thus Tessie du Motay succeeded in establishing between his sensitive surface—that was to be solarized and subsequently inked up—and the support an insoluble layer, which, while serving to attach the printing-block to its foundation, and as a description of medium or buffer, was, at the same time, perfectly incapable of absorbing moisture during the manipulation of the plate in the lithographic press.

That Tessie du Motay's theory of the value of this intermediate layer is a correct one, we learn at once from the Albert process. In every sense of the word are the two processes identical, only Albert has carried the matter further, and discovered a better and more perfect manner of carrying out Tessie's idea. The latter gentleman was never sure of the thickness of his insoluble film in contact with the metal plate, and it is doubtless to the imperfect formation of this layer that the weakness of his blocks was due. Possibly the film was not perfectly non-absorbent, and moisture from the sponging operations, therefore, soon broke it up; or, may be, its thickness was not sufficient to be of any practical value. In any case, however, we find that after very little working in the press the plates always broke down, and further attempts at printing was rendered impossible.

M. Albert's improvements are simple, but very much to the point. Instead of the copper-plate he employs patent plate glass, a cheap and very efficient substitute. Upon this he first obtains his insoluble film, which he can make just as thick as he pleases, coating one side of the glass with his bichromated gelatine mixture, and then laying it, prepared face downwards, upon a sheet of black paper, while it is exposed to the action of light from the back. The black paper absorbs the rays from the surface touching it, and thus, while the greater portion of the film is rendered insoluble, the exterior surface remains unacted upon, and capable of adhering to the second sensitive film, which is subsequently placed on top of it to receive the image, and become, in course of time, the printing block. By using glass, therefore, instead of the opaque metal plate, the great advantage is gained of being able to watch and control the action of the light, and to ensure the production of an insoluble layer of sufficient thickness, and this advantage becomes even greater when we proceed to print from the negative. The exact depth of printing can then be accurately judged from behind during the exposure, and the pressure-frame withdrawn at the proper moment.

By thus carrying out more perfectly Tessie's principle, M. Albert has been enabled to prepare printing blocks from which many thousands of proofs may be printed. The process is, moreover, rendered less costly and elaborate, for the patent plate glass used may always be relied upon as presenting a flat, even surface; and the trouble and expense which must otherwise have been incurred in the preparation of well finished plates are thus obviously uncalled for. At the same time, admitting al these improvements, there is no disputing the fact that in principle the Lichtdruck process is in every way identical with that of M. Tessie du Motay.

PHOTOGRAPHIC SECRETS.

BY W. T. BOVEY

Smiles, in his admirable work on "Self Help," relates a story of a nobleman who, having ran his prodigality to seed, and his fortune beyond its last farthing, conceived the laudable project of retrieving his wasted estate. He succeeded in his object, and died a miser.

To a certain extent this anecdote illustrates the position of those who once were deservedly recognized as the guiding spirits of photographic art, but who are at present distinguished only by the excellence of their works and the secretiveness that has taken the place of their former prodigal communicativeness which conveyed to anxious students most valuable aid and information. It is by no means a difficult matter to divine the causes that brought about the seemingly strange metamorphosis from prodigality to penuriousness to which I have adverted; it may, however, prove more profitable to study effects than to waste time in dealing with first reasons. Such course I propose adopting.

Secretiveness, in its mildest aspect, assumes the form of royal patronage and gracious greeting; and, strange as the assertion might appear to those who innocently believe that the royal greeting leads to an unburthening of every secret connected with the invention, yet I have no hesitation in asserting that at least one half of the photographic patents are made legally void by the mystifications which render the specifications a jumble of words, rather than a straightforward directory that can convey to enquirers the information which the law demands of the patentee. The latest and richest example of directing how *not* to do it is provided by a Mr. Rye, whose formula (*vide* specification) is a bit of chemical jumble which forcibly reminds me of a communication, once received from an old friend, in which I was gravely informed that "the world is a moiety, and has no criterion." Interpreted by the meaning the old gentleman attached to the misapplied words, the sentence was wise and judicious; and it is not impossible that Mr. Rye should mean well, but has misappropriated substances, for the same reason which induces my old friend to misconstrue words, viz., the selection by sound in lieu of sense. If Mr. Rye is really in earnest in the matter, I should like to receive from him answers to the following string of queries. If a bichromate is the substance considered requisite, why bichromates of potash and ammonia? Surely a single bichromate of either alkali base would answer all purposes required! Again, if nitrate of silver is needed, why a mixture of iodide and bromide, when either would decompose and alter entirely the character of the silver salt? Why add silver at all, seeing that it must be decomposed by the chromic acid even when the iodide and bromide are omitted? The application of gums seems somewhat more reasonable and to the point. Still, as these additions are superfluities, why not leave them out, and adopt the gelatine and a single bichromate? My uninitiated reader, accept my word as a guarantee that Mr. Rye's specification is either a proof of its compiler's self-delusion, or it is wilfully intended to delude others.

Photo-mechanical printing needs no complicated formulæ. The simpler the formula the more practical will prove the process, the more perfect will be found the results. I can conceive of nothing more simple than the method invented by Mr. Edwards; yet its results are admirable. My faith in the capabilities of the simple process is, perhaps, best shown by my having purchased the right of working it—a right which will, in due time, enable me to tell my readers concerning the practical application of the invention more than I can at present know.

Turning from the mystification, as adopted by patentees, to those secretive ones who work in private and chuckle over secrets well preserved, I am naturally led to offer remarks on the latest nut the photographic world is invited to crack, viz., Mr. Robinson's "First Hour of Night," where the "gibbous moon" invites lookers-on to explain "how the de'il it got there."

It cannot be denied that photography is deeply indebted to Mr. Robinson; indeed, I am firmly persuaded that his labours and teachings have in no small degree contributed to the successes of the art. His present adoption of the mystical might be unaccountable; yet I for one do not regret the change. Mr. Robinson's former communicativeness taught his brethren how to work; his present reticence will doubtless induce them now to think; and it is neither impossible nor improbable that the fruits of independent thought may prove more valuable to the thinkers than any information of the how-to-do-it kind would accomplish.

I have not, as yet, had the privilege of seeing the picture just launched to be wondered and guessed at, neither am I informed whether I have had any share in its production. Of one thing, however, I can speak with confidence, viz., moonlight views are not novelties of to-day.

The modesty or natural secretiveness (I know not which) of Mr. Charles Breese has proved a means of keeping that remarkably clever gentleman much further in the background than his great abilities merit. Yet it is pretty generally conceded that the marvellous transparencies that issue from his hands cast a decided shade on all competitors. The method by which Mr. Breese produces his negatives and transparencies has been, on many occasions, a source of much conjecture and wonderment, the leading idea being that he has recourse to double, or combination printing. I have enjoyed the rare good fortune of seeing and handling the negatives produced by Mr. Breese. Neither day nor night views afford any indication of dodging. Certainly there are effects of shadow observable in the transparencies which the negatives do not possess, yet the leading features and all the details are present in the negatives. On those negatives I have devoted much thought, feeling anxious to wrest from them the secret which their prudence does not give. I have arrived at conclusions on the subject, but as yet have had no opportunity of putting those conclusions to a practical test. I like not secretiveness in such matters. But am I safe in offering those conclusions practically untried? I fear not, Beverley, and sundry correspondents on a similar occasion, to wit. I have, as is pretty well known, but little time for experimenting in directions that lie apart from my daily vocation. I can, however, and do, find time to think and form ideas on outside matters, and not unfrequently to frame theories on such subjects, which theories deserve, at least, the test of experiment. Is it unreasonable for me to ask the aid of those who have not to turn aside from their daily duties to apply practically what to myself and themselves might appear quite reasonable in theory? I pause for a reply.

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AMERICAN CORRESPONDENCE.

Another Negative Retouching Dodge—Sore Hands—On the Utilization of Old Negative Baths for Printing—Bichloride of Mercury as an Intensifier—War.

Another Negative Retouching Dodge.—As I have before stated, dozens of plans have been brought forward, here and abroad, for retouching the negative, or, rather, for producing the effect secured by means of a retouched negative, during the past year. One of the most useful ones has recently come to light in this country, and application has been made by the inventor for patent protection for the idea. The effects obtained by its use are certainly very striking and pleasing, as you will observe on examination of the prints I enclose. Observe the picture of the stout gentleman: it is from a negative exposed about right—sharp, and so on—but the light is evenly diffused over the face, and the result is a sameness of colour, or, rather, a lack of contrast. The new method is applied to it, and in a very few minutes, as you see by the print, we have a brilliancy pervading the whole picture that is simply surprising—beautifully soft whites in contrast with the untouched portions of the negative that are hard to obtain by simple negative making. A second picture, of the gent with curly hair, is from a negative of much the same quality as the other. You observe there is not a bit of pure white, or anything near to it, in either face, collar, or shirt; there are heavy shadows under the eyes, and the whites that should be are of a bluish grey cast, which is very repulsive. Treated in the new way, the negative becomes a new creation. It prints, as you see, a print of fine quality, which has much the appearance of a finely worked up picture. There is rich contrast and gradation too; the heavy shadows under the eyes are gone, the linen is white where it should be, and the change great. The third subject is of a lady, and is from a negative that has been retouched as skilfully as it could be by the pencil. While it is a fair picture, you see it may be improved by applying this new power to the negative, for the second print shows a higher finish, and is much more pleasing than the first. Had I one near at hand I would enclose you a print from a negative that had been enlarged from a carte to whole size or larger, which would, of course, be grey and coarse, as such reproductions always are. But after treating the negative in the new way, much of the coarseness and spottiness would be gone, and the effect would be that of a picture carefully worked in ink.

The method of doing all this is exceedingly simple, although a principle is involved, and it consists merely in varnishing the "smooth" or "plain" side of the negative, and on that working with an ordinary stump dipped in colour—generally India ink—wherever it is found to be desirable. It will be noticed, for example, if a negative, such as the first or second one alluded to, is taken to work upon, what it most wants to make effective prints is contrast;

colour we have enough, but white is scant, and by this new method we supply it. With a weak negative we can produce the same effects, and where a negative is too strong we can reduce the contrast.

The varnish takes the colour with ease, and one can soon learn to apply it rapidly; the cost is little; it may be applied light or heavy, according to the judgment of the artist; old as well as new negatives may be treated with it. If, after the first application, mistakes are found to have been made, or if the effect is in any way unsatisfactory, it can be instantly removed, wholly or in part, without any injury to the negative whatever. Should the effect not be sufficiently obvious at first, it may be heightened to any degree desired.

Of course it is not a machine that is going to be placed over a negative to do all the work. A skilful hand must hold the stump, guided by the good taste and judgment of an artist who knows where and when to apply it. A few lessons, self-taught, are all that are needed. A little touch here and there will improve almost any negative. Not only may the effect be rendered fine in the face, but the high lights in any part of the picture may in the same way be heightened, in very many instances.

Hold the negative up to the window, or place it on a retouching frame, work cautiously, and the result in prints will be liked. Care should be taken not to allow it to cover up too much detail; and, again, when working upon the face of a female, or any beardless face, there is danger of giving the lower part of the cheek a pouched look where the colour ends, unless it be blended off carefully; you will notice this effect slightly in the picture of the lady I send you. If the dodge is practised with care on proper occasions, I am sure it will be approved.

Sore Hands.—I know there are some photographers who suffer dreadfully from sore fingers and hands, and who dare not allow their chemicals to touch them at all. The principal of one of our largest establishments in Philadelphia is such a sufferer, that if he were to coat and develop but a very few plates, his fingers would in a day or two break out in most painful ulcers. Many remedies have been suggested—such as rubber finger-stalls, lard, cold water applied by means of linen rags, zinc ointment, weak solution of iron, and so on—all succeeding in some cases, and in others not. A correspondent writes me that he has tried all these without avail, and gave up almost in despair, until, he writes, "About ten months ago I began to use an ordinary nail-brush, brushing my hands freely every time after having them in chemicals, such as the toning and fixing solution, and so on. The plan acted as a certain preventive of sore hands, for although a great sufferer before, from that time to the present I have not been troubled. I may be wrong, but I believe the sores are caused by the closing of the pores of the skin, and the utility of the brush is at once evident, by giving a healthy action to the skin."

On the Utilization of Old Negative Baths for Printing.—A great many old negative baths, considered no longer fit for their original purpose, are often thrown with the waste, because of the supposed difficulty incurred in rendering them useful for printing purposes. Still there are a number who utilize such solutions, treating them as recommended by you in the News some time early in the year. Mr. David Duncan, referring to yours, has communicated a method to me which also is found very certain. After neutralizing sunning, adding citric acid (as recommended by Hardwick, to precipitate iodide), filtering, and adding fresh silver until the solution contains thirty-five grains to the ounce, he adds to every half gallon half an ounce of muriatic acid and enough liquor ammonia to make it slightly alkaline, shakes well, and filters. He floats the paper from thirty to forty seconds, fumes as usual, and finds the prints all that can be desired. The operation detailed appears troublesome, but in practice is really not so. For those whose time is not fully occupied, and whose means small, this will be found a useful and economical plan. Where time is worth more than silver, the most economical plan is to send an obstreperous bath to the refiner.

Bichloride of Mercury as an Intensifier.—At our Cleveland meeting quite a discussion ensued on the subject of intensification, which was very interesting. Some of the photographers present declared they never did such a thing as intensify, others confessed to doing it occasionally, while a third class seemed to express honest surprise at the idea of making any negative without intensifying it.

I have frequently raised my voice against the habit of intensifying, except in the case of reproductions, because I believe it to be a bad practice, for reasons already stated. Mr. Jex Bardwell, who is well versed in all matters appertaining to photography, and who took part in the Cleveland discussion, sends me some excellent remarks on the subject, in which he points out the importance of managing the chemicals so as to give softness and detail in the first instance, and then using his redeveloper or intensifier, as the occasion might require, to produce force and brilliancy. I send you details of his formula and practice.*

War.—Thanks to the Atlantic Cable, photographers in this country began to feel the effects of the Franco-Prussian war before the first gun was fired. When "Louis and I" started for the front, albumen paper went up with a jump, twenty per cent. or more; when King William left Berlin for Paris, filtering paper became at once very scarce and high; when Napoleon telegraphed to Paris that he had defeated the Prussians and "Louis picked up a bullet," evaporating dishes advanced wonderfully in price, and German glassware grew suddenly scarce. We are more alarmed about paper, however, than anything else, for our whole supply of plain paper comes from abroad. Let us hope, however, that the war will soon be over, precious life spared, and no more sorrow caused, except to the ambitious ones who have brought bloodshed and strife upon those they are sworn to protect and prosper. Dr. Vogel sails for home on the 25th.—Very truly yours, Edward L. Wilson.

Philadelphia, August 15th, 1870.

THE ROYAL CORNWALL POLYTECHNIC SOCIETY—PRIZES.

[from our own correspondent.]

The Thirty-eighth Annual Exhibition of this Society will open to the public on the publication day of the News. In the meantime, the judges have been engaged in determining the merits of the contributions. Those in the photographic department will not have had much trouble to make their awards except on one point, which I will mention at once. Messrs. Robinson and Cherrill, of Tunbridge Wells, and Colonel Stuart Wortley, both exhibit sea and landscapes; both exhibit moonlight effects of rare merit. If the treatment had been the same, a conclusion as to the best might possibly have been arrived at with less difficulty; but where the style of the pictures is so widely different, and yet each so brilliant and beautiful, it must result in a verdict governed by individual taste rather than by any standard determining the best photograph.

Colonel Wortley exhibits eighteen art studies, twelve of which are landscapes and six portraits. The former are all what are commonly termed moonlight scenes; and well may the uninitiated make the mistake as to the real origin of the pictures. Each picture bears upon its mount some appropriate lines, and the spectator at once realizes the subject.

Messrs. Robinson and Cherrill have likewise eighteen pictures, among which are the moon pictures, "The First Hour of Night," "The Last Hour of Day, 6.30 p.m.," "Turn of the Tide," "Outward Bound," "Beached Margent of the Sea," &c. The last (as well as most of the former) has a rolling surf wave just ready to break upon the shore, and across its black hollow a gull is flying, and no doubt a real and veritable one.

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* We give Mr. Bardwell's article on another page.

These two collections, with that of Messrs. Vandyke and Brown's portraits, are well worthy a whole day's study. These latter consist of enlargements finished in water-colours, photo-crayons (Sarony's process), and some oil-coloured miniatures. One of the photo-crayons is certainly one of the most magnificent specimens of portraiture ever shown in this or any other exhibition.

Netterville Briggs, of Leamington, has four very carefully executed 10 by 12 portraits; Nicoll, of Edinburgh—a couple of good cabinet size portraits; R. H. Preston, of Penzance—some good photo-crayons after Sarony's manner; Adam Distin, of Leven, Fifeshire—four *genre* pictures, by the process of Johnson, of Wick; Mr. Hubbard, of London, has sent his composition, "Stolen Moments"; Mr. Cocking, of Peckham, exhibits four pictures in photo-tint, two portraits and two landscapes; Mr. Row, of Redruth—a frame of portraits very carefully executed, but which would be more pleasing with a less sombre background.

In the landscapes, Mr. Nicoll, before mentioned, is an exhibitor, as is also Mr. E. J. Eyres, of Liverpool—nine views in North Wales, carefully printed on enamelled glass.

The amateurs number but three; namely, Mr. Brownrigg, of Dublin; Capt. Foster, of Macclesfield; and Capt. Paget. The former sends five pictures, of which two are charming specimens, viz., "From above the Fall, Glendalough," and "Lough Katrine." The second gentleman has three pictures—"Bunch of Grapes," "Upper Hembury Fall, Cheshire," and "A Row on the Lake, Hembury Park;" the two first are marked as prize pictures of the Amateur Photographic Society. Capt. Paget has seven pictures of that beautiful and historical locality in the Pyrenees, "Pau." There are two beautiful examples of interiors; viz., "The Receiving Room, Pau Castle," and "The Bed Room of Jeanne d'Albrecht."

Mr. Solomon has sent two of his improved magnesium lamps, and, as illustrative of their qualities, some good enlargements, said to have had an exposure of only thirty seconds.

[BY TELEGRAPH.]

The prizes have just been determined. First silver medal to Messrs. Robinson and Cherrill, Col. Stuart Wortley, and Mr. Hubbard; second silver medal to Mr. Sanderson and Capt. Paget; first bronze medal to Messrs. Briggs, Distin, Courtenay, Cocking, and to the magnesium lamp [we presume Mr. Solomon]; second bronze medal to Capt. Foster.

ON THE UTILIZATION OF OLD NEGATIVE BATHS FOR PRINTING.

BY DAVID DUNCAN.*

The London Photographic News of February 11th, 1870, contains an article by its able editor on the utilization of old negative baths for printing. I think the subject has been before ventilated by the same gentleman. It is an interesting matter, and doubtless of some importance to many of our fraternity. The process of bath boiling is at all times an unpleasant one, rarely unattended with loss and but little advantage gained, more especially if acetic acid has been used to acidify the solution when in working order. For my part I detest the operation, and in practice avoid it as much as possible. There are plenty of good operators of the same mind also, albeit there are excellent workmen who place much dependence upon a bath which has been worked and boiled; others boil their baths from necessity, believing it to be the most economical method of saving the silver; and some boil, and boil to very little purpose. All will agree, however, that if requisite conditions be fulfilled, there is nothing better than a new bath; it lasts longer, works cleaner than a boiled one, yielding negatives also of proper density and tone. It must be a great consideration, therefore, to be enabled to obtain excellent prints with very little trouble from a "played out" negative bath. This can be done. The editor of the Photographic News recommends the method proposed by Hardwick in his "Photographic Chemistry." On reading the article referred to, I was induced to make a few experiments in the same direction, and succeeded, with a modification, beyond my expectations, which I now publish freely.

Take any old negative bath (no matter if it fogs or has been overworked). If acid, neutralize either with carbonate of soda or liquor ammonia (a slight excess of alkali does not matter), and set in the sun for an hour or so; if there is no sun, keep it in the light as long as you can. The object of this is to precipitate all organic and other impurities, while retaining the alcohol in the solution. When sufficiently sunned, add one drachm of a solution of citric acid (sixteen grains to the ounce of water) to every eight ounces of bath solution. The object of this, according to Hardwick, is to precipitate the iodide of silver in the bath. Filter, and add fresh silver until the solution contains thirty-five grains to the ounce. Now,* to every half gallon add half an ounce of muriatic acid, shake well, then add enough liquor ammonia to make it slightly alkaline; again shake well, filter, and save the filtering-paper for subsequent filtering as long as you can. Every time you strengthen, add a little acid and ammonia as described. Float the paper from thirty to forty *seconds—no more*. Fume as usual, and the prints will be all that can be desired.

The operation in detail appears troublesome, but in practice is really not so.

PHOTOGRAPHIC RESEARCHES OF THE SUN.

M. L. Sourel has recently communicated to the *Academie des Science*, at Paris, the result of certain photographic undertakings conducted by him at the Imperial Observatory. His endeavour has been to secure enlargements from negatives of the most perfect character, of sufficient size and clearness to show the nature and details of the spots on the sun's surface; and efforts in this direction have been continuously made since the month of April. The apparatus he employed was an equatorial instrument of English manufacture, fitted with an object-glass of Foucault's.

Four examples of solar photography were submitted to the *Academie*, two representing the entire orb of the sun, and measuring 11 and 18 centimetres respectively, and two others reproducing groups of spots, taken on the 17th and 18th of May; the diameter of the sun in these latter instances was in the one instance 80 centimetres, and in the other as much as 1 metre 70 centimetres. In all of the illustrations every little detail could be easily distinguished; the penumbra of the spots, the difference in the brilliancy of their various parts, the faculæ in their neighbourhood, &c.

M. Sourel thus concludes his memoir to the *Academie*:—"I have already been able, thanks to these enlargements, to form an idea of the evolution of the spots, and to prove, by observations of which it is impossible to question the truth and sincerity, that the theories I communicated to the *Academie* in August, 1869, and which I was unable at the time to support except by carefully executed drawings, are in every way correct and borne out by present results. The minor enlargements serve for the purpose of determining the trajectories of the spots, while the bigger ones exhibit clearly every necessary detail, so that they will, indeed, constitute an indispensable basis to solar meteorological research. When the series has been completed, the results of their teachings will form the subject of another memoir.

"To-day I more particularly desire to point out the use to which photography may be put in aiding the progress of solar science. It appears to be beyond doubt that even by means of a refractor furnished with an object-glass of very long focus, astronomical photographs may be produced, under certain favourable conditions, depending upon the brilliancy of the luminary to be photographed, the optical power of the lens, and the state of the atmosphere during the operation."

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* *Philadelphia Photographer.*

* This is Mr. O'Neil's method, published in the March number of this year's *Photographer.*

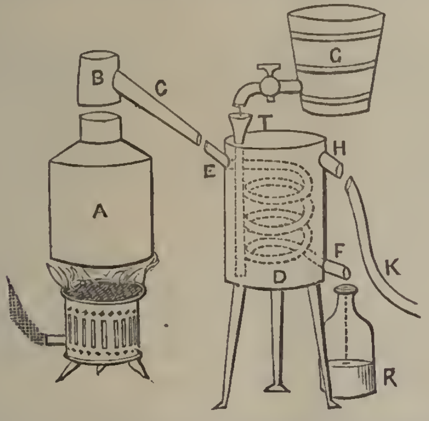
PURE WATER AND THE NITRATE BATH.

BY ELBERT ANDERSON.

Mr. Andersen continues, in our Philadelphia contemporary, his instruction in the practice of photography as conducted in Mr. Kurtz's Gallery, in the form of dialogues with a pupil. His last subject is the nitrate bath, and the materials employed in its preparation. He begins by stating that the solution of nitrate of silver in water in which the plates are dipped is known, technically, as the negative bath, in contradistinction to the positive or printing bath, upon which the paper is floated for the print. The negative bath, then, consists of a solution of nitrate of silver in water to which is added an iodide and an acid. It is essential that all the ingredients be in a state of purity as near as may be.

Water.

In nature water is never found perfectly pure. The simplest, cheapest, and best method of obtaining pure water is to distil it yourself. If you cannot procure a little still at your stock-house, you may very easily get any tinman (who deserves the name) to make you one at a cost not exceeding ten dollars, which will enable you to distil enough water far purer and at half the cost you would have to pay to procure it elsewhere, and of which you can soon and readily sell enough to your brother photographers to pay for your still and the cost of running. I will make you a drawing, and describe the method of using it: Let the parts A, B, C, represent the boiler, boiler-head, and stem, which are to be made of copper tinned on the inside. The boiler (A) may be twelve inches high and ten inches in diameter. The head (B) may be four inches high and three inches in diameter, and fits the boiler like any ordinary tin-can cover.



Mr. Marshall (Pupil).—Must it not fit perfectly steam-tight?

A. Not necessarily; let it be simply a nice fit. The stem (C) may be one and a-half inches in diameter, tapering to three-quarter inch, and eighteen inches long. It is made to fit into the worm (E F), which consists of a tube of block tin about half inch interior diameter and six feet long, coiled up in the common tin condenser (D) as represented, soldered water-tight where it enters and where it leaves the condenser. T is a tin pipe half inch in diameter, soldered to the inside of the condenser, reaching down to within half an inch of the bottom. H is a tin pipe half inch diameter and three inches long, and is intended as an overflow pipe. Use as follows: Clean thoroughly, and pour into the boiler a quantity of water equal to one-fourth its capacity; set this over a gas stove or any other convenient fire; fit on the head, and connect the stem with the condensing worm; when the water boils, drops of distilled water and steam will issue from the orifice (F), which may be caught in the receiver (R). At this moment a stream of running water must be let on in the pipe (T) from any suitable reservoir, and when the condenser becomes full the waste water will escape by the overflow, and can be led away as desired. The steam passing down the cooled worm is instantly condensed, and drops out as distilled water into the receiver.

M. Why do you put so little water in so large a boiler?

A. Because, if you were to fill it with cold water in the first place it would take a very long time to boil, whereas this small quantity will boil in one-tenth the time. When fairly started, suffer the water—which will escape at H nearly boiling hot—to run into a bottle, and, when this is full, remove the head of the boiler and pour this in (you need not remove the boiler from the fire); and thus you can gradually begin to fill up with nearly boiling water. Throw away the first pint or so of distilled water, as it is generally impure. With this little contrivance you can easily distil from three to four gallons of water per day. The next best, after distilled water, is to take clean blocks of pond ice and melt it in an evaporating dish.

M. Why is this thus?

A. Water, in the act of freezing, separates completely from everything which it previously held in solution; even the air contained in water is expelled in the act of freezing, and, becoming entangled in the thickening fluid, gives rise to the minute bubbles generally observable in blocks of ice. It is found, as a fact, that ice formed by the freezing of sea water is, under all ordinary circumstances, fresh, and entirely free of salt. Thus the great ice fields of the Arctic and Antarctic Oceans are always composed of fresh-water ice. Make a solution of indigo in water, and the ice formed by the congelation of this solution will be perfectly colourless.

M. And in summer, when I can get no ice?

A. Then take the best water you can get, and add forty to fifty grains of nitrate of silver to every gallon of water; when dissolved, expose it in a clean white glass bottle (candy jars answer excellently) to strong sunlight, covered with a piece of glass, tied down to prevent the wind disturbing it. The water will shortly begin—say in an hour—to discolour, and will finally grow perfectly black, according to the amount of impurities. Pure water will not discolour it exposed to sunlight, even when pure nitrate of silver is dissolved in it. When the water has become perfectly clear, it is ready for use.

Nitrate of Silver,

Or, strictly speaking, nitrate of the oxide of silver, can be procured sufficiently pure, of several brands well-known in the market, from the stock-houses; therefore it is neither necessary nor advisable for you to make it. Yet I hold that every photographer ought to know how to prepare it, in an isolated case of emergency. Here is one of the simplest methods when pressed for time:—Make a mixture of one part of nitric acid, chemically pure, and two parts of distilled water; put this in an evaporating dish over a gentle heat, and add from time to time, as it dissolves, silver coin cut into very small pieces, until a small portion of metallic silver remains undissolved. The action here may be stated by saying the nitric acid is decomposed; one part oxidizes the metallic silver and suffers the escape of oxide of nitrogen, the other part combines with this oxide and produces the nitrate of the oxide of silver, or, as we call it, for short, nitrate of silver. When the necessary amount of silver is dissolved, evaporate the solution to dryness, and when cool dissolve it in pure water. Separate one-fifth of this solution, and add to it, drop by drop, a solution of caustic potash in water, until the dense brownish-black precipitate (oxide of silver) ceases to be thrown down, and the potash remains in excess. When this has settled, pour off the water, and add fresh water to wash the oxide; repeat this until all trace of the potash has disappeared. Now add this moist oxide to the other four-fifths of the solution, and boil it until a drop of aqua-ammonia added to it ceases to strike a blue colour.

M. What is the cause of this blue colour?

A. It is caused by the aqua-ammonia coming in contact with nitrate of copper, which was also formed, the silver coin always being alloyed with copper. Again evaporate the solution to dryness, and then fuse it. The organic matter, if there be any, will be thrown down as a black powder on the sides and bottom of the dish during the fusion, becomes carbonized, and is thus rendered insoluble; whilst the nitrate of copper becomes decomposed by strong fusion, an insoluble oxide of copper is left behind, which may be filtered out when the mass is again dissolved in pure water. You may now, if you like, crystallize it, or use it at once.

(*To be continued.*)

BICHLORIDE OF MERCURY GELATINO-IRON SOLUTION FOR INTENSIFYING.

BY JEX BARDWELL.[*]

I have no doubt you will remember, while at the Convention in Cleveland, a member asking for information and others' experience in the use of mercury as an intensifier, and the fun the members made of it when, in answer to the question how strong he used it, a gentleman answered, "Very weak; and, in fact, that it could not be used too weak!" But, for all the laughter, there appeared to be sufficient interest felt to raise a suspicion that it was used by many there present. And again, the question was asked, That those present who obtained sufficient density and printing power from their negatives with one application of the developer should hold up their hands; and quite a number held theirs up, and the questions were discussed pro and con.

Now, I take it that there is a lesson in this that would be to our profit to study. If we could only meet oftener, and have just such talks, it would be much to our profit. We might disagree with the man who used mercury, but if he had pictures to show us (made by his method) that excelled, we would all go home and try mercury. I once used mercury, and will, by-and-by, tell you again how I used it, seeing what I said at the Convention about it was somewhat mixed by the reporter.

Mercury, used as an intensifier, is much abused, and is capable of producing very different results; viz., a soft, brilliant negative; one so thin that it loses all value as a negative; and one of perfect density, suitable for the photo-lithographic process. Photographers who obtain sufficient density on one application of the developer will find out, by experience, that, under certain circumstances, and to produce certain results, they will have to depart from that practice, and bring other forces into play. It is true that for some subjects, and under certain conditions, one application of the developer would be sufficient; and, again, the most skilful of photographers sometimes fail to obtain a sufficient density, even with the most intense of intensifiers.

Mercury may be used on a stereo negative, producing the softest effect. From one so intensified I have made hundreds of prints, and is over six years old, and will to-day make as soft a print as when first made; but I have seen a negative that, after printing a few dozen prints from it in sunlight, became so hard as to be useless. As I said at the Convention, I do not recommend mercury as an intensifier, but many use it and are quite partial to it, and to them I give the formula that I use, and, with care, they will find the method useful; and I shall also give another formula of a different kind that I think cannot be excelled; but, in fact, almost every photographer has just such an article, one of the kind that can't be beat.

You will often find a photographer looking for a lens that will do every kind of work, and thinks he has not got a good one because he finds some other lens will do some particular kind of work better than his will do with the developer and intensifier. You must modify them to suit the work in hand. See how many different developers, redevelopers, and intensifiers there are, that come well recommended by the men who use them. We must not condemn because they fail in our hands. The one we think most of may be the very worst one of the lot. The one that we cannot manage at all may, in some other hands, produce results that would put us fairly to shame.

I do not think you will find that the man who scorns the use of a redeveloper or intensifier occupies a first-class position, so many circumstances occur that make it necessary to employ the force that they place at our disposal. There was a time when I made a collodion bath and developer that worked well together, in giving sufficient density, to produce those old black-and-white pictures that were at one time thought so desirable, and I was very proud; but I have had that conceit taken out of me very effectually. I now manage my chemicals so as to give me softness and detail, using my redeveloper or intensifier, as the occasion may require, to produce force and brilliancy. But enough of this. I will now give the two formulæ.

Mercury is not used as a redeveloper, but as an intensifier. The formulæ below are for a portrait or landscape, and not for reproduction, requiring considerable intensity:—

No. 1.

Bichloride of mercury	½ ounce
Water	20 ounces

No. 2.

Water	20 ounces
Iodide of potassium	20 grains

No. 3.

Water	4 ounces
Of No. 1	½ ounce

The negative is taken, washed and fixed, and washed well and *dried*. Then flow the negative with water, and flow it with No. 3 just long enough to discolour the film, and well wash and flow with No. 2; and as soon as the dark film becomes evenly tinted with the solution, wash and dry. It will be found that the mercury has not penetrated through the film, but only just acted on the surface to which it was applied. On looking at the back of the negative it will be seen as before the mercury was applied, but the surface will show the creamy effect of the iodide of silver; but on looking through the negative it will be found to be of a dirty greenish-yellow, and transparent, and, if properly done, will be found to give a soft, brilliant print, and the negative will not change in the sun.[*] I find many use a solution of bichloride of mercury and iodide of potassium mixed in one solution, but it is really a very bad intensifier for portrait negatives, and it will change in the light.

I will now add one more to the already large list—a formula that I think hard to beat. I find it everything to be desired, both as a redeveloper and as an intensifier.

Take of—

Coxe's gelatine	2 drachms
Water	2 ounces

and soak for an hour or two, and then, by a gentle heat, dissolve, and add

Caustic potass	2 drachms

and boil briskly for twenty minutes (best done in a Florence flask); set aside to cool, and neutralize with acetic acid, and make up to twelve ounces with water; this will keep for a considerable time. To use it, take (say) two drachms of the above, and add to it an equal quantity of the iron developer you have in use, and set it by your side convenient to reach as soon as wanted. You develop your negative; and if wishing to use it as a redeveloper, you drop a few drops of a thirty-grain silver solution into the measurer containing the above four drachms of solution, and apply to the plate without washing; but if you should wish to use it as an intensifier, then, after applying the developer, you wash the plate before flooding it with the above solution, and you will find, in either case, that it will act to a charm. I never found a better. Without washing the plate it is a redeveloper; and by washing an intensifier. It is, in fact, a new power; and I am confident that any photographer who will use it with judgment will be more than well pleased with it. If any of you try it and don't like it, try it again some other time. But remember, if you wish a nice soft negative, be sparing of the silver; the consequence of using it freely is a coarse deposit and hardness.

A PERMANENT TONING BATH.

BY AUGUST THIRY.[†]

In M. Kleffel's photographic manual, entitled "Das Neuste aus dem Gebiete der Photographie," a toning bath is recommended under the name of Wilson's gold bath, which is, indeed, nothing further than that mentioned by Davanne and Girard, in their work on positive photography, rendered neutral with a little chalk.

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[*] *Philadelphia Photographer.*

[*] Our readers will remember that this is the method of intensifying which the late Mr. Lacy used. Unfortunately, in some cases, the negative becomes harder during long exposure.—Ed. Photo. News.

[†] *Photographische Correspondenz.*

As I have continually employed this bath since the publication of MM. Davanne and Girard's notes in the *Archiv*, in 1864—for a period, therefore, of five years—with much success, without once having entirely renewed it, I can recommend the same as the most convenient, permanent, and, possibly, cheapest toning bath in existence; it is especially suitable, moreover, for those photographers who prepare their own chloride of gold, as the freedom of the same from acid becomes a matter of but little importance, seeing that the chloride of calcium produced on neutralizing the solution is likewise of use in the bath.

I dissolve in a stock bottle my acid chloride of gold in a small quantity of water, and neutralize the solution with an excess of very clean, finely powdered chalk, diluting the liquid after considerable agitation, until an ounce of the same contains one or two grains of gold.

Of this concentrated solution I employ, for the toning bath in use, one ounce diluted with four or eight ounces of water, and add as required, when its action becomes slower, during the operation of toning even, as much of the stock liquid as may be necessary to render the bath again efficient. Further quantities of chloride of gold are put into the stock bottle from time to time, together with an excess of chalk, and the latter after a time becomes rich in precious metal.

Before and after every employment of the toning bath the liquid is filtered, and for months the same filter paper and funnel may be used. Occasionally the gold is extracted by one of the well-known methods from the filter, chalk and precipitate.

My expenditure of gold may be seen from the following statement. By converting into chloride 113 grains of metallic gold recovered from residues, and a further quantity of gold from other sources amounting to 192 grains, making a total of 305 grains, I was enabled to tone thirteen quires of albuminized paper, and obtained besides 164 grains of metallic gold from the residues. As will be seen, therefore, only 141 grains of metallic gold were actually used (at the rate, namely, of 11 grains per quire) which, inclusive of the cost of conversion into chloride of gold, may be valued at one and a half florins, or half-a-crown.

The main advantage of this gold bath is its simple preparation and employment; other toning solutions may be useful for special purposes, but this one has afforded me considerable satisfaction with all descriptions of papers.

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PREVENTION OF BLISTERING AND SLIPPING IN DRY-PLATE WORK.

BY M. CAREY LEA.*

In most sorts of dry plates there is a tendency of the developing solution to work through the film, not as water works through paper, but by an osmotic action, as is shown by the fact that, when once underneath, the solution shows no tendency to return when the plate is removed from the developing bath, and the same takes place in the fixing bath and in the washing.

Now, in my opinion, the greater extent to which this tendency exists the better. If it could be wholly avoided it would, of course, be satisfactory, but this cannot well be, because for dry plates we need a porous collodion, and such porous films will always blister. And if the tendency exists at all, a few blisters are worse than a great many, because they are far more unmanageable. The cotton which I use is extremely porous, so that by the time the plate is developed and fixed the whole film has been penetrated and has been detached from the glass, except where held by the edging. This is what I desire to see, having found the means to regulate the edging precisely to suit. And this is done as follows:—

The small camel's-hair pencil, tied to a glass rod, is dipped into the four or five-grain solution of rubber in benzole, is carried along the long side of the glass from end to end, but on the short side it breaks off about half an inch from each corner. This leaves four little open spaces, through which the liquid underneath the film can escape, and whichever end of the plate chances to be set uppermost in drying, there is always provision for draining off the water under the film.

Since I have adopted this plan I never give a thought to the matter of blisters, as the plate always takes care of itself; except, indeed, in this, that after the plate has lain some time in a horizontal position in the fixing bath, or under the tap, it is best not to raise it too suddenly to the vertical, because it will sometimes (though not often) happen that there may be water under the film, and if the plate be suddenly raised, this may flow down to the end with sufficient force to break the film. By raising slowly all danger is avoided, and the water flows out through the open spaces.

My first plan was to carry all the edgings a little short, so as to leave the corners open. But the corner is just where the plates most needs support, and although the method answered as far as the escape of the liquid was concerned, there was the disadvantage that the film occasionally got loose at the corners, and then the plate needed extremely careful handling to avoid injury. The plan here described avoids this difficulty completely, and is also better for the escape of the water.

I need hardly point out how much more complete the washing must be when the liquid and the wash-water that get through the film can escape freely. Indeed, with a film that shows any tendency at all to blister, we cannot hope for a thorough washing in any other way, and it will easily be seen that a few detached blisters may give more trouble than where the whole film becomes separated, the edges excepted.

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* *Philadelphia Photographer.*

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Recent Patents.

IMPROVED PHOTO-ENGRAVING PROCESS.

BY WALTER B. WOODBURY.

The following is the specification of Mr. Woodbury's method of obtaining plates for copper-plate printing, which we noticed some months ago:—

These improvements consist, firstly, in the combination of a gelatine relief produced photographically by well-known means from a negative of a sketch, design, or drawing in black and white, and the obtaining therefrom a reverse in any soft metal by hydraulic, screw, or other pressure, to be afterwards used as an engraved plate for printing from in fatty opaque inks, as in the present method of engraving; if necessary, an electrotype may afterwards be made from the soft metal plate.

Secondly, in an improved method of obtaining a granular surface, such as would give an ink-holding ground where the negative possesses merely gradations of light and shade. This I accomplish by means of mixing with the gelatine and bichromate (instead of colour in a fine state of subdivision as used in the carbon process) a coarse, granular substance or powder of the same description. This will produce a relief having the necessary qualities for producing such ink-holding ground.

In some cases I partially dry the gelatine relief and dust over it a coarse powder, such as emery, which, while the relief is in that state, will adhere only to the portions representing the dark portions of the design, and will consequently give to the plate pressed therefrom a corresponding granular effect, which is usually wanting in such plates as are now prepared, but which is necessary to a successful result.

The third part of my invention consists in an improved method of producing direct from the gelatine relief itself, by pressure, in contact with other substances, such as cardboard, leather, *papier-mache*, paper, &c., designs on these materials, and in the particular method of preparing such gelatine reliefs, which is done as follows:—A film of gelatine, colour, and bichromate is exposed under a photographic negative or positive, and the exposed side is brought into contact with a sheet of copper, steel, or zinc under water, and the two surfaces pressed in close contact to exclude the water. It is then placed in hot water, which will remove the greater portion of the gelatine, and then dried. This plate, when passed in a press, will reproduce the design on the cardboard, leather, or other sub stance; and, where paper is pressed in contact therewith, will produce a design similar to that known as a watermark.

IMPROVED METHOD OF PRODUCING COMBINED NEGATIVES.

BY T. G. HEMERY.

Some months ago we noticed the results of Mr. Hemery's mode of combining several negatives on one plate. His method is described in the following specification:—

The invention relates to the production of a single negative from the combination of several negatives, or of a single negative embracing the effects of the combination of several negatives.

The object of the invention may be obtained in various ways. Supposing the picture intended to be produced be the representation together of two sitters, one partly over or covering the other, similar to the combination portraits in profile on medallions and coins. In the following description I mean by the first or principal figure the front or eclipsing body, and by the second figure I mean the one partially eclipsed.

By one method (No. 1).—First, the principal figure is photographed and developed in the usual way, the background being by preference black, or such as will give a transparent background to the negative after development. I now generally dry and varnish the negative, and cover the figure neatly with an opaque varnish or substance capable of subsequent removal. The remainder of the plate is to be perfectly transparent, and the film carefully removed if necessary. I now coat the back of the plate and excite in the usual manner. Then focus the second figure through the ground glass, turning its ground side outward for this purpose. The plate is then put in the slide with the opaque image to the lens, and the second figure is impressed through the glass, which, having the opaque image on its front surface, is left with an exact counterpart of the first figure perfectly transparent after development. I now remove the opaque substance from the first figure with a brush, sponge, or other suitable means, and take a transparency of the double negative, which will combine perfectly together. I now proceed as usual for the final negative, which may be enlarged or reduced at pleasure. If it is not thought advisable to immerse a plate in the nitrate or exciting bath containing on one surface an image covered with varnish or other material that might be thought to contaminate it, then a second method may be followed.

(No. 2.) Take two impressions of the first figure consecutively without any change of position on the part of either sitter or camera. Now, while the second plate is preparing, one of the first pair may be rendered opaque, and the film removed from it if the background is not sufficiently transparent. It is now placed in the dark slide immediately in front of the wires on which the plate rests; the dark slide may want adjusting for this purpose. The second plate is placed in this instance not as in method No. 1, but as usual, the prepared or excited side towards the lens and the second figure impressed, which, as before, having an opaque image in front, is left with a perfect aperture, into which the other or non-opaque figure will exactly fit or register when the two plates are subsequently brought into contact. The transparency and subsequent negative may then be taken as in method No. 1.

Another method (No. 3) is one which, perhaps, offers the least trouble to sitters, as all the manipulative portion is done in their absence. The first or principal figure is taken twice consecutively on one plate without change of position either of sitter or camera, but with two backgrounds, one by preference pure black, or such as will give a transparent background to the plate; and the other white, or such as will give an opaque background to the plate. The second figure is photographed on another plate with an ordinary background, but a dark background I find most suitable for the purpose. Now superimpose the negative of the first sitter with the black or transparent background having first rendered the figure opaque and removed the background film it not sufficiently transparent, and take a transparency of the combination. Now slide the two negatives that are in front of the lens, or slide the camera or lens for the same purpose, till the second figure of the first or principal sitter with the white background occupies the same position as the combined negatives previously did. It is desirable that the background of this figure be sufficiently opaque to keep the glass clean and transparent in the transparency now to be taken, and if not so it may be covered with paper, colour, or other suitable material. The figure being now in position, slide the plate in the camera and expose for the second transparency without refocussing. On developing the plate, one half has a portion of the second with a transparent receptacle, into which the transparency of the second figure of the first or principal sitter on the other half of the plate fits; I now cut the plate in two and combine the transparencies, and they will yield a perfect negative equal in every respect to the merits of the original separate negatives. The transparencies may be taken on separate plates if desired.

The combining several negatives into one according to my invention is applicable to two or more figures, or two or more negatives being parts of a picture or subject, as well as two portraits for the production of one ultimate and final negative. I do not confine myself to the precise details herein given.

If the negatives are greater in number than two, then the same method is followed as in No. 2, continuing the masking for each part of the picture; and if more transparencies than one are necessary to be taken, then the recombination of these transparencies will furnish the complete or final negative.

Correspondence.

PHOTOGRAPHY BY MOONLIGHT.

Dear Sir,—Assuming that there is no great difficulty in obtaining photographs by moonlight—which is more than doubtful—what is the advantage to be gained? If picturesque effects are the aim, the sham moonlights obtained by sunlight are more beautiful than the real things can be hoped to be. If scientific experiments are intended, then their only interest consists in an exact statement of means and results. I shall be glad if any of your readers can give me a good reason for attempting such work.

Again, if the light be sufficient to permit dingy pictures to be taken by moonlight, will not a lens of enormous angle be required to secure foreground, sea, and sky with the moon, like some of those recently mentioned in your pages?—Very truly yours,

J. Hurst.

MOONLIGHT PHOTOGRAPHS.

Dear Sir,—The writer of the "Echoes of the Month," in your last issue, quotes the calculations of some authority—name not stated—to show the difficulty or impossibility of obtaining photographs by moonlight. I think, however, that he has not carried the arithmetical evidence far enough. Let us assume the correctness of the authority he quotes, and regard the light of the sun as 30,000 times more intense than that of the moon; then let us take the evidence of M. Claudet that he had ascertained that in sunlight an impression capable of development with mercury was made upon a Daguerreotype plate in one-thousandth part of a second. This gives thirty seconds for a similar impression in moonlight. From this it may be gleaned that, in suitable weather, an impression of the moon, and of clouds and water it brightly illuminates, might be secured without an exposure of many hours, possibly not many minutes.

X.

MOONLIGHT PHOTOGRAPHY.

Sir,—There is an old paradox to the effect that there is nothing so false as facts, except figures. I was strongly reminded of this *mot* by the speculations of "An Old Photographer" on Lunar Photography, in the "Echoes of the Month" last week. Being an old and therefore an experienced, photographer, he was shrewd enough to base his speculations on the hypotheses of others, and not on calculations of his own. The figures he quotes would, if trustworthy, conclusively prove the impossibility of photographing by the light of the moon; but since photographic images have actually been produced by the light of the moon, it is the falsity of figures only which is demonstrated by the calculations cited. I have seen one of M. Ogier's pictures with the moon in the shape of a cylinder, which, to my mind, bears unmistakable evidence of having been produced by the light of the moon. Mr. Breese, I believe, amongst many charming imitation moonlights, did produce a picture of a white statue solely by the light of the moon, the exposure having been seventeen minutes. I have seen two two or three photographs of the moon and moonlit clouds. Mr. Robinson's moonlight will, I presume, from what I hear, startle us by its effect of reality, although, unbelieving race that we are—I speak for the photographers of my acquaintance—we look rather to see the skilful work—the "dodge," if you like—of a clever artist, rather than a chemical or optical *tour de force*. We must wait a couple of months, however, I presume, before the picture is exhibited, and therefore it does not at present either help or mar the discussion of the possibility of moonlight photography.—Yours respectfully, LUX IN TENEBRAS.

Talk in the Studio.

A Remarkable Picture of the Moon.—An American paper says:—"A bald-headed Boston gentleman was recently importuned by some young ladies to present them with his photograph. He complied with the request; but, instead of presenting them with a picture of his handsome features, sent a very striking view of the back of his head. The joke was duly enjoyed, but the projector was much surprised shortly after to see copies of the picture in the windows of a print store. On inquiring of the attendant, he found to his horror that the sharp photographer had published it as 'A remarkable picture of the moon.'"

Composition of Chinese Lacquer-work.—According to Dr. Wiederhold, in *Les Mondes*, genuine Chinese lacquer-work is done over tin-foil, and consists of a mixture of two parts of copal and one of shellac, molten together. When fluid, there are added two parts of boiled linseed oil; and, after the vessel containing this mixture has been taken from the fire, there are gradually added ten parts of oil of turpentine. If colour is required, gummi-gutta, dissolved in oil of turpentine, yields yellow; and dragon's blood, dissolved in the same liquid, yields red.—*Chemical News*.

New Plastic Material.—A new mixture, which may be used as a waterproof cement or for various plastic purposes, is described by M. Rost in the *Revue Hebdomadaire de Chemie*. It consists of a mixture of litharge and glycerine, in such proportions as may suit the purpose, so that it may form a creamy liquid or pasty mass. The mixture becomes, in a short time, a hard, homogeneous mass, which readily adheres to metals, resists the action of water and steam, and a temperature of 275°. In many instances, this paste is preferable and very superior to red-lead cement (linseed oil and red lead); and this glycerine-litharge paste may be even used, when in very fluid state, for galvano-plastic copying, since the material preserves even fine engraved lines.

The Ultra-Violet Rays.—The *Philadelphia Photographer* calls attention to the statement of Professor Janssen, that he has found that the ultra-violet rays are visible to the naked eye in the Himalaya Mountains, at an altitude of 1,000 feet, with a very dry atmosphere. He concludes that the ultra-violet rays are absorbed by vapour, and found this confirmed by passing the solar rays through a tube of 37 metres in length. He explains, from this, the experience of photographers that the solar light has less activity in the afternoon, as the amount of vapour in the atmosphere increases as the day advances, and the air becomes chemically less transparent.

Rice Paste for Mounting Photographs.—Take one quart of hot water and add of finely-ground fresh rice until thick enough to suit; then boil for one minute; add camphor to keep it from decomposing. This makes a white paste, and is just the thing for vignettes.—*Philadelphia Photographer*.

Pictorial Effect.—A correspondent of the *Philadelphia Photographer* says:—"'Robinson's Pictorial Effect in Photography' has opened my eyes, and made me a new man. It is an invaluable book, and entirely fresh."

Citrate of Soda in the Toning Bath.—A correspondent of our Philadelphia contemporary says:—"A toning solution that will work as soon as mixed, and any desired tone can be got with it with a very small quantity of gold, I make as follows:—To 15 ounces of water add 15 grains of gold. This is solution No. 1. For solution No. 2, take 15 ounces of water, to which add 2 ounces of bicarbonate of soda; shake well and dissolve; then add to this (a small quantity at a time) citric acid, until you have added $\frac{3}{4}$ of an ounce; filter and it is ready to use. To tone, to about 8 ounces of water add 1 ounce each of Nos. 1 and 2, and a pinch of salt. If it tone too slow, add a little less water, or *vice versâ*. This amount will tone about four dozen carte prints. I make my bath 40 grains strong, and keep it at that; if it shows signs of fogging, I pour it into a bottle and set in a water bath on the stove, and bring it to the boil; then let it cool, and filter; then bring it to 40 grains strong by reducing or strengthening, as the case may be. Use any good collodion and albumen paper. Silver solution for paper. 35 grains strong, and fume ten minutes with strong ammonia.

A Good Developer.—

Water (distilled or ice water) ...	34	ounces
Iron	7½	drachms
Nitrate of potash	5¼	,,
Acetic acid	1¼	ounces
Alcohol	2¼	,,

Photography and War.—Those who recollect the admirable photographs which Mr. Roger Fenton sent home from the British camp in the Crimea may wonder how it is that the photographers have not made better use of their time in Prussia and France at this particular period. It appears, however, that these ingenious gentlemen are quite as objectionable to both sides as the British "special" has hitherto been to the French army. A contemporary says:—"In no case have both belligerents in the present continental war shown a more jealous disposition than in respect to the presence—within the lines of either army—of foreign artists, and especially photographers. Serious objections presented themselves to the taking of photographs of landscape views in the field of the enemy's position, and as such views may be obtained at a considerable distance without much danger of buildings likely to influence the tactics of battle or siege, or of the ground plans, or sketch of route, or of the progress of works, or a test of the advance, foreign artists not attached to the army, or officially employed in any way, have been carefully watched throughout the entire campaign on both sides. The roving photographer's occupation, as far as the present war goes, is as much gone as that of the special correspondent. We are, however, informed by the same authority as that already quoted, that photography has been of considerable service already in the present war. It says: "The Prusssians, keeping an eye to the left bank of the Rhine, knew perfectly well the meaning of every operation of the French in connection with the fortresses of Strasburg, Nancy, Metz, Chalons, Verdun, Thionville, Sedan, Valenciennes, Lille, and Dunkirk. The French, although, haplessly, not equally on the alert, knew the character and importance of the defence works of Mannheim and Heidelburg in Baden, Ulm, Augsburg, Munich, Ratisbon, and other Bavarian strongholds. For immediate purposes, no doubt, the photographic art has been put into active operation at the seat of war." It is to be hoped that the severe regulations with regard to photographers may be somewhat relaxed, and that we may shortly have transcripts of some of those picturesque scenes which even the horrors of war cannot deprive of their interest. Let us hope some one—an official, if an outsider is not allowed to operate—will be permitted to make as interesting a chronicle of this war as Mr. Roger Fenton did of that in the Crimea.—*Sunday Times*.

The Cardiff Exhibition.—The *Cardiff Times*, in a long and enthusiastic notice of Mr. Robinson's photographs, has the following remarks on the sea pieces which we shall hope to see at the November exhibition:—"Mr. Robinson's pictures are six. 'The First Hour of Night' is a grand picture of a sea-beach just as darkness is throwing her veil over it. The western sky is losing the irradiation the sunken sun had shed as it went down. How on such a night the photograph was taken is a puzzle. 'The Turn of the Tide' is another evening picture, and here the artist has just caught the moment when the incoming tide has reached its height, and the first receding wave is pictured the instant it has raised its head. 'Outward Bound,' 'The Foaming Shore,' and 'Breaking Waves,' are companion pictures, but are by no means similar. There is in each that ever-varying aspect which the sea always presents, and which so weirdly attracts one's gaze. The title of the former is probably suggested by the sight of a steamer in the offing, whose smoke indicates that she is outward bound. The title of the sixth picture, with a fitness which characterizes the artist, is taken from poetry, and is 'The Beached Margent of the Sea.' Here we have the same beach, but a complete change in the appearance of the water. Here is one long wave, which has risen its head ere it dashes itself on the sands, as a serpent crests its neck ere it strikes a blow. See, its back is curved, its foam-tipped, sharpened head hangs over the ground as if suspended in air, and—wonderfully happy chance!—from out of the hollow formed by the overhanging crest of the breaking wave flies a sea-gull, upward, away from the water's reach. Clear as the breath of spray which falls in the corner there, is the outline of that lucky bird. Beautiful as is the scene, the fortunate circumstance that placed that little white bird against the dark outline of the wave quadruples the value of the picture. In several of these photographs the effect of the moonlight on the water is inexpressibly charming."

A New Paper Reagent.—From *Cosmos* we obtain the information that M. Böttger has produced a new test-paper, which is highly sensitive towards the alkalies and alkaline earths. The reagent is a magnificent colouring matter, obtained from the leaves of an exotic plant (*Coleus Verschaffelti*) upon digestion for twenty-four hours with absolute alcohol to which a few drops of sulphuric acid has been added. The paper is prepared for use by the usual process. The colour is a splendid red, which passes more or less rapidly into a fine shade of green, by the action of the alkalies or the alkaline earths. It is far more sensitive than either turnsol or turmeric: it is unaffected by carbonic acid, and will indicate the presence of the least traces of the carbonates of the alkaline earths in natural waters. A moistened strip of the paper, when held at the opening of a gas jet, immediately assumes a green colour, from the effect of the ammonia.

Early Photographs.—In the beginning of the present century, M. Charles, the great French physicist, in the course of his scientific lectures, used to produce, by the action of light on prepared paper, silhouettes, or black profiles. No record has hitherto been published of the method employed, a circumstance which has often been matter of regret. We recently learn that M. Bontemps has presented to the library of the French Academy of the Sciences the MSS. of M. Charles. Amongst these papers are the MSS. of his lectures on physical sciences. It is not improbable that these papers may contain some notes of the means which he employed in producing the portraits in question, which, at the time, were the great attraction of his lectures. The historians of photography have always hoped to find in these writings the first step towards French photographic discovery. Wedgwood's experiments were brought before the Royal Society in 1802.

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To Correspondents.

Leo.—Amateurs are admissible in all photographic societies. The London Society will, we presume, answer your purpose best. It commences its meetings in November next. Write to the Secretary, Mr. J. Spiller, at 35, Grosvenor Road, Highbury New Park, London, N.

J. S. W.—The yellowness of the old print enclosed in your letter is due to sulphur. It may have arisen in the ordinary course of fading: or it may have been produced at once in the fixing bath, which, if old and acid, might easily cause such a result. 2. When a toning bath has become purple it will rarely be found of further value for toning purposes. The purple colour is caused by the chloride of gold being reduced to the metallic state, and still suspended in a state of fine subdivision in the solution. You should avoid keeping your toning bath in the light. 3. Your plan of retaining the old hyposulphite solution, and adding fresh hypo to it, is very dangerous, and will be a certain cause of fading prints. When hypo is used over and over in the way you describe, however, few prints may be fixed in it; a constant change is going on in the nature of the solution, by which sulphur is liberated, and all prints fixed in such a solution will change and become yellow more or less rapidly. If you have very few prints, use very little solution; but to secure safety, always put aside, as done with, the fixing solution after it has been used once.

R. F.—There is no trustworthy method of restoring a faded print. You may try a dilute solution of bichloride of mercury.

G. D.—The lens you mention will answer—with a stop for half-plate portraits in the majority of instances—very well; but the No. 2 of the same series will answer better. The Year-Book for 1869 is, unfortunately, out of print.

J. M. Cooke.—Dr. Van Monckhoven's apparatus for enlarging by solar or artificial light, with ten-inch condenser, and all appliances complete, cost eighty guineas. Mr. Dallmeyer is the agent, and will doubtless supply any other information you may require.

Helpless Rage.—We can readily understand and sympathise with your mortification on being deprived of your camera for so long during summer weather, but we fear that we cannot help you to a remedy; and we fear that nothing would be gained by "showing up" any one. If you consider the case for a moment you will see that it is difficult to show a legitimate cause of complaint. Your local tradesman sends to a London camera maker a camera to repair: he is, perhaps, at the time, busy with orders for new apparatus, and permits your tradesman's commission to stand over. Even if the repair in question had been a desirable task, you have no means of knowing that other work did not legitimately take precedence of it; but as repairs are generally troublesome and unprofitable, they very commonly stand aside for a convenient season. If the London manufacturer be really unfairly negligent, your remedy will be to avoid him in future. Your best plan now will be to write direct yourself, and ask, as a favour, for early attention. If you let us know particulars we may have opportunity of making some enquiry which will help you.

A Constant Subscriber.—The addition of carbonate of ammonia to the fixing bath has been recommended as aiding perfect fixation, and, by preserving the bath alkaline, preventing the liberation of sulphur, and so preserving the prints from being sulphurised. Mr. Spiller recommends four ounces of hyposulphite of soda and one ounce of carbonate of ammonia, in a pint of water. You will find details in the Year-Book of Photography for 1869.

W. P. G.—There are various methods of removing silver stains from the fingers without danger. One very simple one consists in first rubbing the stain with tincture of iodine—that is, iodine dissolved in alcohol, about ten grains to an ounce—and then removing the yellow iodide of silver thus formed with a strong solution of hyposulphite of soda. We very commonly remove such stains from our own fingers by the use of pumice stone whilst washing hands.

W. James.—As a view of the front elevation of the building the photograph is very good. Of course, such a subject does not claim any criticism on pictorial grounds.

B. L. B.—There are various methods of rendering fabrics waterproof, but we will repeat the recipe to which you refer:—In a bucket of soft water put half a pound of sugar of lead and half a pound of powdered alum; stir this at intervals until it becomes clear, then pour it off into another bucket, and put the garment therein, and let it be in for twenty-four hours, and then hang it up to dry without wringing it.

F. S.—Registration will give you a copyright in your own photograph of the picture, but will not interfere with other persons copying the same picture if they obtain permission to do so. You must register before you issue any prints.

B. M. D.—The film dissolving when varnished is, unfortunately, by no means an uncommon trouble. It generally arises from some defect in the collodion, sometimes proceeding from the use of a little cotton, which is soluble in alcohol, and sometimes from the collodion being old and somewhat decomposed. If you use a benzole varnish instead of a spirit varnish the film will not dissolve; or, if you wish to use spirit varnish, give the film a coating of thin gum water before the negative is dried after fixing and washing. This is a safe remedy, always worth using when there is any risk of the film dissolving in the way you describe.

J. T.—Your attempt at a Rembrandt effect is not altogether unsuccessful for a first effort. Bear in mind, however, that however deep the darkest shadows may be, they must not be opaque. You must secure sufficient reflected light to give transparency to the shadows.

H. C. Lee.—Thanks. In our next.

Several Correspondents in our next.

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Photographs Registered.

Mr. E. T. Watson, Hull,
Photograph of Review of the East York Rifles.
Mr. W. L. Berry, Leeds,
Photograph of Old Brook House, Cleckheaton.
Mr. C. Watson, Spennymoor, Durham,
Photograph Group of Local Preachers.
Mr. James, Wednesbury,
Photograph of Board of Health.
Messrs. Wistar and Sons, Beverley,
Photograph of St. Mary's Church.
Messrs. Fisherwick, Preston,
Lithograph Trade Mark.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
Washed and Fumed Albuminized Paper—Modified Method 433
Photography in America 434
Tunicare and Preliminary Coatings 434
The Paris Photographic Exhibition 435
Foreign Miscellanea 435
The Albuminizing of Glass Plates. By Paul Harmsen........ 436
Alum in the Printing Bath 436
Photography in America. By Dr. Vogel 437
Solar Camera Printing. By Prof. J. Towler, M.D. 438
PAGE
To Work and Keep a Nitrate Bath Neutral. By William Bell 440
Keeping and Preparing Collodio-Bromide Solution. By M. Carey Lea 440
A Modified Dry Process. By J. F. Plucker 441
Pure Water and the Nitrate Bath. By Elbert Anderson 442
Correspondence.—Bi-Medallion Portraits 443
Proceedings of Societies.—Manchester Photographic Society ... 443
Talk in the Studio........ 443
To Correspondents........ 444

WASHED AND FUMED ALBUMINIZED PAPER—MODIFIED METHOD.

We have continued to receive communications on the use of washed sensitive paper, in almost every instance strongly confirmatory of Col. Stuart Wortley's recorded experience in its favour. We have, since we last wrote on the subject, received two accounts only of failure, and in both instances the causes were easily traced. One correspondent had failed from the cause mentioned before, the use of a weakly-salted paper and excessive washing. The result was that the paper contained insufficient chloride of silver to furnish a vigorous print. From the example sent to us it seems that a diluted albumen had been used in preparing the paper, as the surface was comparatively dull and slightly albuminized, thus depriving the paper of another element of vigour. In the other case the failure was of an opposite character, and appeared to be chiefly due to unskilful manipulation. Our correspondent, wishing to follow Col. Wortley's instructions for light washing by drawing the excited paper through the water, had contrived to do this in a manner so irregular and imperfect as to leave an unevenly distributed proportion of free nitrate on the paper; stains and irregular depth and colour of image being the result.

A communication we have just received from an old correspondent seems to furnish a sure remedy for failure of this kind, but how far the plan proposed is equal or superior to the system of washing remains to be determined by further experience. Our correspondent recommends removing the free nitrate by blotting-paper as quite efficient and less troublesome to amateurs than washing. We quote his letter:—

"My Dear Sir,—I have tried the plan of washing my excited albuminized paper as recently recommended in your pages by Col. Stuart Wortley, and take this opportunity of thanking him for calling attention to a most useful plan. The prints I get at the end of a week with washed and fumed paper are quite equal to those printed on the same day with unwashed and unfumed paper. My printing necessities are not great, but as I attend to it chiefly myself, no part of the duty was to me more irksome than exciting the paper every morning. There was, first, the necessity of seeing that a dish was perfectly clean; then pouring out half a gallon of silver solution, and, after exciting a few sheets of paper, pouring it back into the bottle, draining the dish, carefully washing it, &c. All this involved much time and trouble, always more or less of waste, and often mess and stains from slight spills, stained fingers, &c. This every morning for a comparatively small number of prints was very tiresome, and yet it was necessary, because the paper would not keep without discolouration. The washing system was an enormous boon. I excite my paper in half sheets at a time. I find that I can float about twenty half sheets in little more than an hour, and these generally serve me for a week's printing. I have not tried keeping the paper for more than a week.

"I think, however, that I have made an improvement on the washing system. Some time ago you published the fact that Mr. Jabez Hughes was in the habit of removing the free nitrate from his paper by means of blotting-paper, the aim being to secure quick drying. I tried the plan with great advantage in many respects, but finally abandoned it, because my prints on paper so treated were scarcely sufficiently vigorous, my negatives being generally soft and delicate rather than intense. Under favourable circumstances, and with some examples of paper, the prints on paper which had been blotted were fine, but at other times flat and less brilliant than when the free nitrate of silver had been left to dry on the surface. And so I gave the system up. It has since occurred to me to try it again, and then to fume the paper as in the case of washing. It answers admirably. I have tried several samples of paper, and all with success. During the recent weather the paper has kept well for a week, fuming it just before use. How far it might answer as well in very hot weather I cannot yet say.

"The plan I adopt is this. I use a bath ranging from fifty to sixty grains per ounce; I float from two to three minutes; then remove the sheet, and hang it over a rod to drain into a dish beneath, whilst I am placing another sheet on the silver solution. Whilst this is floating I place the last one, which has drained a little, on a sheet of white blotting-paper on a clean board, place another sheet of clean white blotting-paper over it, and rub down, and then remove the sheet, putting it aside face downwards, to make way for the next, and by this time the paper on the bath has floated long enough. When the sheets are dry I place them between two boards, and place a weight upon them, which keeps them flat, and makes subsequent manipulation pleasant. When required for use I fume the pads as directed by Col. Wortley. The results are all I could wish. I hope that some other correspondents will try this plan, and let us know their experience.—Very truly yours,

"Theta."

The plan recommended certainly promises well. We shall be glad to hear further results. In the meantime we have pleasure in placing on record the experience of Mr. R. Manners Gordon in relation to the washing method. In a letter just received he says:—

"*September 9th*, 1870.

"My Dear Sir,—I have lately been employing Colonel Stuart Wortley's method of printing, with considerable success. Like, I dare say, a good many other 'occasional printers,' I had got into trouble with my toning baths, &c., and happening to see some very charming prints produced by him, I gave his plan a trial.

"It seems to me that the only thing necessary to secure success is to guard against too long a washing of the excited paper; a rinse is quite sufficient.

"The value of the fumed pad may be easily demonstrated by placing it over one half only of the paper in the printing frame. The half in contact with the pad will be found to print to a rich purple, acquiring great depth and brilliancy; the other half, with double or treble the exposure to the light, would be greatly inferior to it.

"Colonel Wortley was good enough to allow me to make up some of the double chloride of gold and potassium in his own laboratory, and under his own inspection; the resulting product I find to be invaluable for use with any of the usual toning baths, especially the acetate of soda.

"As I see several correspondents of the News have been writing for and against the method in question, I shall be glad, if your space will allow of it, to record my vote in its favour.—Faithfully yours, R. Manners Gordon."

PHOTOGRAPHY IN AMERICA.

It was our good fortune, a few days ago, to spend some hours in the company of Dr. Vogel, who called upon us on his way home from the United States to Berlin after a sojourn in the Western Continent of between two and three months. The primary subject of his attention and examination whilst in the States was, of course, photography; and although his impressions have been and will be recorded in his letters published in these pages, a few further remarks on the subject, on points arising in course of conversation, may not be without interest.

As may be readily conceived, Dr. Vogel's estimate of photography in America inevitably assumes a comparative form. He places the photography of the New World as science, art, and commerce beside that with which he is familiar in the Old World, considered in the same relations, and contrasts the two, generally to the advantage of America, but not always. The result of such a comparison is just what might have been expected *a priori*. In enterprise, activity, and general technical intelligence, photography takes precedence in the New World over the Old. In art, and general refinement of result, Dr. Vogel did not find the standard so high as in his own country. In the main, the position of photography and photographers he found much better than in Europe. In Germany, the status of the photographer carries with it no social prestige, and the successful photographer is generally glad to sink all reference to his profession. In the United States, no such disqualification is attached to the commercial practice of the art. In Germany, it is not common to find one photographer perfectly master of every branch of his art; whilst in the States this universality of culture was not uncommon. Photography involves, in short, in the States, much more activity, intelligence, enterprise, and profit than in the Old World. America appears to be the paradise of the really capable photographer with skill and energy enough to seize its prizes.

The enormous extent of the demands upon photographic enterprise, and the expensive work done, were startling when compared with the quiet and limited practice with which the observer had before been familiar. Take, as an example, the establishment of Mr. Kurtz, of New York. He is a young German who has been in the States six or eight years; an artist by profession, and a man of high culture and elegant accomplishments. He is principal of one of the first establishments in the United States, which he has established by the sheer virtue of excellence. The rent of his establishment in Broadway is ten thousand dollars a year, which is equivalent to upwards of £2,000 sterling. It is scarcely necessary to say that, in order to pay a rent of £40 sterling per week, an enormous business must be done. All the examples of the work of Mr. Kurtz are exceedingly fine. As a rule, they are remarkable for freshness and originality of treatment, both in pose and lighting, and yet, as Dr. Vogel assured us, but a very few seconds were usually devoted to the arrangement of the sitter or blinds. The decision and execution were promptly conceived and rapidly executed.

Although the card is still the prevalent size, the cabinet portrait has been very largely adopted, and is much more common in America than in Germany. Collodion positives on glass, on enamelled iron, and on enamelled paper are still much in demand in the provincial towns, especially in agricultural districts, where the visitor to a town wishes to take home his portrait on the same day that he sits for it. The Daguerreotype is not quite an obsolete picture in the States, but is still occasionally produced. At the establishment of Mr. Bogardus, in New York, an old German operator, who has never practised the collodion process, is retained for Daguerreotype work solely. The stereoscope and stereoscopic pictures are still popular in America, fine stereo transparencies being much prized. It is much to be regretted that one of the most beautiful and instructive forms of photographic delineation should have so completely fallen into abeyance in this country.

Amongst the art which, in the States, surprised Dr. Vogel most, was the great popularity of enlargements, together with their exceeding excellence and great cheapness. Many of the solar camera enlargements he saw were so perfect that it was impossible to distinguish them from fine direct prints. The price at which they were produced for the profession was exceedingly low, the recognized charge for an enlargement on a whole sheet of paper being two dollars and a-half, equivalent to half a guinea sterling. As, in America, there are an average of one hundred and twenty days in each years which are perfectly clear, with uninterrupted sunshine, against twenty such days in Germany, the chances of the latter—and of this country, we may add, as well—can never equal those of the United States in this kind of enlargement. In the production of photo-crayons, which are becoming very popular in the States, and for which pure sunlight is not necessary, the chances are more equal.

One feature of the enterprise of American photographers is noteworthy: it is the avidity with which they purchase and study good specimens of European work. Thousands of examples of Berlin card portraiture are imported annually solely for sale amongst photographers. Reutlinger's work, Salomon's, or that of any photographer of repute, is eagerly sought after, and the influence of it is gradually becoming very apparent, Salomonesque pictures of higher or lower pretensions being very common. Retouching on the negative is common in the best establishments; but whilst various "dodges" are adopted—such as the use of ground glass for negatives—Dr. Vogel is of opinion that none of them in any degree supply the place of skilful retouching.

The National Association of Photographers appears to be a great success, and to have united in the bonds of brotherhood and co-operation the best photographers in the States. The Exhibition was most excellent and instructive, and was visited with great interest and enthusiasm. Nothing will probably tend more effectually to elevate the art character of the national work than the constant opportunity of examining and comparing the work of others, and especially the works of high excellence which find their way to the exhibition held in conjunction with the annual meetings of the Association.

Dr. Vogel returns to Berlin, from whence he has heard nothing for two months, with sad apprehensions of the possible loss of brothers, relatives, and friends all fighting with the army in France. The knowledge of great victories achieved by his nation affords but little compensation for the fear of serious personal bereavement.

TUNICARE AND PRELIMINARY COATINGS.

The importance of clean glasses, and the difficulty of securing certainty in such cleanliness when the work is left, as in many establishments it must be, to subordinates, give especial value to any simple means of treating the plate which shall be as efficient as cleaning it. The application of a film of some inert substance naturally suggests itself, and various preliminary coatings have been tried, amongst which one of the most efficient has been the film of very dilute albumen now much in favour. Some time ago a solution bearing the name of "tunicare" was introduced to photographers as a panacea for all the evils engendered by dirty glasses, and the general result of experiment has been confirmatory of its claims. The nature of the preparation remained a secret, and this circumstance formed the chief drawback, for, notwithstanding the assurances of the inventor that it was innocuous, some photographers hesitated to immerse in their baths plates coated with an unknown substance, even when that was covered again with a film of collodion. Dr. Schnauss, of Jena, to whom photographers have frequently been indebted for careful investigation and analysis of photographic novelties, has recently undertaken an analysis of tunicare, and in the *Archiv* he publishes his report, which we subjoin. He says :—

"I have just received, through the kindness of my friend, Dr. Liesegang, a small bottle filled with the renowned 'tunicare,' a secret medium for glass cleaning of English origin. A chemical examination of the liquid afforded me the following results.

"The fluid is of a transparent nature, possessing a slightly acid reaction, which disappears, however, on its being warmed to a notable temperature. The bottle sent to me gave out an unmistakable odour of chloralhydrate, but a test with potash solution (which would at once have converted the chloralhydrate into formylsuperchloride, or chloroform, a compound whose presence would be evident by its peculiar odour) failed to substantiate the presence of any compound of this particular kind. The smell may, therefore, have resulted from the employment of a vessel which had previously contained some of the compound in question.

"Evaporation of the liquid portion gave rise to fumes which were capable of ignition for the moment, and the residue was an easily carbonized material, proclaiming the presence of nitrogen. In boiling the tunicare in a distilling apparatus, white flocculent matter became formed, which betrayed all the characteristics of albumen; the distilled portion consisted simply of water and alcohol. No particular residue remained after washing the albumen. Testing for chlorine with nitrate of silver yielded no precipitate of chloride of silver, but simply a white opalescent turbidity, apparently of albuminate of silver."

He concludes, therefore, that the preparation consists of a dilute solution of albumen in water mixed with a small quantity of alcohol, the latter exercising the double function of acting as a preservative, and aiding in the operation of cleaning the glass surface.

Dr. Schnauss is an able chemist and a careful observer, and that tunicare contains albumen and alcohol may be unhesitatingly accepted; but that the preparation contains something more, or that the albumen has undergone some especial treatment with which we are not familiar, also seems probable for several reasons. Albumen, for instance, has an alkaline reaction, whilst Dr. Schnauss finds that this solution is slightly acid. Alcohol has a tendency to precipitate albumen from its solution, and coagulate it, whilst here the solution contains a notable proportion of alcohol without causing a precipitate. The analysis suggests, however, that as regards the silver bath, plates coated with tunicare will probably have no more action than plates coated with dilute albumen, now much in use.

THE PARIS PHOTOGRAPHIC EXHIBITION.

We have reason to fear that the beautiful collection of pictures brought together in the French capital, and opened to the public on the first of May last, has been disturbed, and probably damaged to a considerable extent. The interior of the *Palais de l'Industrie*, in one of the vestibules of which the photographs were exhibited, has been hurriedly cleared out as far as possible, and converted into a gigantic hospital and store for medical requisites, the wife of Marshal Canrobert having organised in the building a central depôt for the reception of linen, bandages, and hospital necessaries sent in from all parts of the country. The photographs, therefore, have probably shared the fate of the other art productions included in the exhibition of Fine Arts which was opened at the same time as the photographic collection, and have been hastily removed and put away in some out-of-the-way locality.

Under these circumstances exhibitors from this country must not be too sanguine of receiving back their show-frames intact or uninjured, but may, indeed, consider themselves fortunate if their property is returned to them under any conditions whatever. In the meantime we are glad to have had the opportunity of affording our readers some information respecting the collection, and the report of our correspondent who visited the exhibition very soon after its opening to the public is, we believe, the only complete one that has appeared in the journals devoted to photography. Even the *Moniteur de la Photographie* had not finished its report when the exigencies of the war necessitated the breaking up of the collection, and some of the German journals have honoured us with translating our remarks *in extenso.*

We do not know whether the jury nominated to adjudge the prizes have enjoyed sufficient opportunity for inspecting the various exhibits, and are thus in a position to make the promised awards; but it is possible that the terrible state of affairs in Paris may be instrumental in upsetting altogether any resolutions which may previously have been formed.

Foreign Miscellanea.

As might be anticipated, very little of interest in regard to photographic matters is taking place abroad just now, especially in Germany and France. The journals, both in Paris and Berlin, are still issued, but their appearance is delayed from the fact that some of the staff are actively engaged in military service, and their contents are, moreover, bereft of novelty. The exercise of private photography has been strictly prohibited, both by the French and German authorities, in the neighbourhood of the camps; and beyond a staff of military operators attached to the army of the Crown Prince, there is, we believe, no use of the camera permitted.

Photo-lithography has been actively employed by the Prussians in copying the French staff map. The impressions of this document were never very plentiful, and as at the commencement of the war its sale was peremptorily stopped throughout the country, no opportunity was afforded of acquiring any further supply. Maps in the possession of the Prussian authorities were therefore at once photo-lithographed, we believe at Stuttgardt; and in the space of a week many thousand copies were distributed to the troops of King William.

A sanguine photographer has lately been printing large numbers of the portrait of the Comte de Paris, presuming that at an early date the demand for pictures of the Orleans princes will assume considerable proportions.

It has been rumoured abroad that in consequence of the unsettled state of the Continent, resulting from the Franco-German war, the London International Exhibition, proposed for 1871, would be postponed; and some surprise is now felt that, instead of delaying the same, notice has, on the contrary, been given that the gathering will be opened somewhat earlier than was at first announced.

The production of chrome-gelatine plates, such as are used for processes akin to *Lichtdruck*, is beset with many difficulties on account of the tendency of the chrome salts to crystallize out on drying. This defect may be avoided, it is true, by diminishing the dose of bichromate; but in that case the sensitiveness of the film is reduced, and the character of the impressions impoverished. According to Poitevin, perfect plates, free from crystals, may be obtained in the following manner:—For every quadrat decimeter of glass to be coated half a gramme of gelatine is taken, swollen in water, and subsequently dissolved in a water bath, in as nearly as possible the necessary quantity of water to coat the plate. The solution is poured upon the glass surface in a horizontal position, and thus allowed to dry. To render it sensitive, it is immersed for five (or, at the most, ten) minutes in a concentrated solution of bichromate of potash, and, when taken out, rinsed quickly in clean water, and allowed to dry in the dark; if time is an object, instead of allowing the gelatine coating to dry, it may be dipped, as soon as the same is set, into the chromic bath, washed, and dried. If it is desired to mix the chromate at once with the gelatine, another substance capable of preventing crystallization—as, for instance, alloxantine—should be added. In this case, equal proportions of saturated solutions of the substances in water should be employed.

Dr. Van Monckhoven has been investigating the subject of Lichtdruck, and has completely succeeded in his endeavours to produce photo-mechanical prints by a method analogous to that of M. Albert. The learned doctor promises to publish frankly the details of his manipulations, together with the best means of practising the process.

One of the Berlin Court photographers, M. Hermann Guther, is said to be doing a thriving business by photographing the French prisoners in that town, and more especially the Zouaves and much-dreaded Turcos. These latter, it is stated, were very glad to hear of the willingness of the Berlin operator to secure their portraits, and took very great pains to render themselves attractive, or, perhaps, one ought to say, less ugly. They turned out to the best possible advantage, and were never tired of affording the photographer subjects for studies, groups, &c., which find a ready sale among the principal towns of Germany. The pictures may possibly do good service in showing the inhabitants of the "Vaterland" that these dusky warriors of Algeria are, after all, not such ferocious beasts as they have hitherto been supposed to be.

A little book recently published in Paris should have an extensive circulation. It is entitled *Les Insucces en Photographie*, and is written by M. V. Cardier. It enumerates the various well-known defects and failures which are, unfortunately, so common in everyday photography; and gives not only the remedies for overcoming the inconvenience, but also the reasons of their occurrence. If carefully prepared and well edited, a work of this description cannot fail to be of the utmost value, especially to amateurs; but, at the same time, unpractised operators should always be wary of too much doctoring.

The *Moniteur de la Photographie* recommends the use of chloride of copper for removing stains of nitrate of silver, especially upon linen. For treatment of a fabric, a very dilute solution is used, and the stuff afterwards thoroughly washed with plenty of water. The chloride of copper does not destroy the colours printed upon the linen, provided the same is rinsed in a solution of hyposulphite of soda.

The Emperor of Austria has conferred upon M. H. Sebastianutti, of Trieste, a gold medal in acknowledgment of that photographer's skill in producing some very fine landscape ruins of Dalmatia, in the vicinity of the battle-fields of that province.

M. Ogier, of Jersey, has written to the *Moniteur*, giving an account of some moonlight views he has recently executed in that island; he apologises for their imperfection on some points, but M. Lacon bears witness to their considerable merit.

The price of magnesium will, in all probability, be very shortly reduced, in consequence of a new and cheap method having been discovered of preparing sodium, by means of which the metallic magnesium is recovered from its chloride. The price of sodium amounts, at present, to twelve shillings a pound, and a company recently formed to work the new sodium patent hope to reduce its cost to one-twentieth of that sum. Should this marked reduction in the price of sodium really come to pass, we may hope to purchase magnesium at a very moderate rate indeed, and thus secure a source of artificial light at once effective and economical.

THE ALBUMINIZING OF GLASS PLATES.

BY PAUL HARMSEN.*

There is possibly no manipulation connected with the negative process so tedious, and, as a rule, so imperfectly carried out, as the cleaning and polishing of the glass plates, as this work is at present conducted in most European studios. How many negatives require to be retaken; how many defective pictures to be sent out; how much retouching is necessary; and how often does the film lift from the plate, for the simple reason that dirty glass has been used for the reception of the photographic image!

If we compare this antiquated and elaborate mode of glass cleaning to the simple and certain method of albuminizing the plates now practised in American studios, the question at once arises, why the improvement has not been universally adopted, seeing that the same has been made known for several years? I myself became acquainted with it in 1867, from a copy of the *Archiv*, and have since then never ceased to practise it. Possibly the *modus operandi* may appear at first sight somewhat complicated, but if the system is once well understood and adopted, photographers will soon throw away their dusters and brushes, and doubtless discharge their polishing lad into the bargain.

But enough of recommendations; here are the directions.

The white of an egg is beaten to a froth by means of a wooden fork, and when, after standing for a dozen hours, the liquid portion has separated, this latter is placed in a glass vessel, together with three to five drops of ammonia and three hundred grammes of rain water. The mixture is well shaken, and filtered before use, the quantity in question sufficing for a large number of plates, and keeping good for a considerable period.

The glass plates, previously to being coated, should be placed over night in dilute sulphuric acid (one part acid to one part water); they are then washed under a tap, rubbed with filter paper, and again rinsed. The albumen is poured over the wet glass in the same way as collodion, care being taken not to allow any of the liquid to flow upon the back of the plates, and, when coated, they are placed, prepared face inwards, against the wall upon blotting-paper one after another, so that their surfaces do not touch. Superfluous albumen must not be poured back again into the stock bottle, but into a spare vessel, being again filtered before re-using.

In an hour the plates are generally dry, and may then be put away in boxes, to be used as necessary; they are not dusted before coating, but the collodion is applied forthwith. The albuminized plates may be kept for months.

It is the best plan to wash off spoilt negatives before drying, as otherwise the albumen attaches itself to the glass with extraordinary tenacity, and cannot be removed except by continued immersion of the plates in acid.

Elberfeld, July, 1870.

ALUM IN THE PRINTING BATH.

Mr. H. T. Anthony, writing in the *Bulletin*, says:—

"It having occurred to me, some two months ago, to try a combination of nitrate of silver and alum for a printing bath for albuminized paper, I made an experiment on a small scale, which was very satisfactory. I subsequently introduced it at our printing department, and for the last two months it has been used with good result. I cannot claim that the prints are any more brilliant, but there are other advantages of importance. Every photographer knows how invariably a scum forms upon the surface of a silver solution which is not constantly used. By the use of alum this scum is entirely prevented, the double solution appearing to have the quality of more perfectly and thoroughly coagulating the albumen. As a consequence of this, the paper keeps its whiteness in hot weather much better than where the simple silver solution is used. The toning is effected with equal ease, and the whites (on the Steinbach paper) much better after fixing. In preparing the silver solution, it is merely necessary to add as much powdered alum as it will dissolve.

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* *Photographische Archiv.*

"As we have not tried this solution on a variety of papers, it will probably be as well for experimenters to try it on a small scale at first."

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PHOTOGRAPHY IN AMERICA.

BY DR. VOGEL.

Glass-Houses—Lenses—Cameras—Slides—Enlarging Processes.

Montreal, Canada, July 3rd, 1870.

In my last letter I detailed the Cleveland Exhibition. In the meanwhile I have continued my photographic studies in America, and have been in Chicago, Cincinnati, and St. Louis, three cities of 250,000 to 300,000 inhabitants, with a lively commerce, all three centres of Germanism in America. I am glad I can say that in photography also the best names that are known here are German. In St. Louis I found a whole series of brave countrymen and good artists, besides the already formerly named Messrs. Scholten, Benecke (especially landscape photographers); Messrs. Cramer, Cross, Saettele, and others, whose names I have forgotten; they have formed a photographic society, together with some clever American photographers, among whom I name Messrs. Fitz, Gibbon, and Fox. This society, like the Berlin "Verein zur Foerderung der Photographie," keeps out all inconvenient elements by a very strict method of election by ballot. I was much rejoiced to find Berlin photographs in the windows, at the shores of the Mississippi. There hung genre and cabinet pictures from Loescher and Petsch, and Milster; reproductions of oil paintings from the Photographische Gesellschaft; and Richter's Odaliske was admired as a novelty just arrived. This acknowledgment of our Berlin pictures at St. Louis is the more to be esteemed, as the photographic performances there are nearly the best of all in the United States. As everywhere in this interesting land, so also at St. Louis, an elegant and large room for the reception of the public is a *conditio sine qua non*. There is a complete picture-gallery, among which also oil-paintings sometimes have their place. In the greatest contrast to these large reception rooms, the dark room everywhere in America is confined to a ridiculously small room, not to the advantage of the operator's health. You will conceive, that these splendid establishments are not without toilet rooms; one for gentlemen, and one for ladies. The glass-houses in America are commonly high. In Europe the whole north front and the roof are covered with glass, but in America commonly only the middle part of the north front at an extension of 16 to 20 feet is opened to the light, that is, covered with glass (see fig. 1); all the other is brickwork. The arrangement of the curtains is very simple, sometimes only a white sheeting, to keep off the direct sunbeams. I very seldom perceived sun sails; these are large curtains, like sails, extended in the open air, above the glass house, to keep off the sun-beams. The great height of the glass houses causes a very great dispersion of light over the whole room, which is tolerably favourable for groups, but not so for single portraits. To reduce the height for such pictures, in some glass houses I saw curtains extended that covered the upper half of the light opening. The same was attained by a simple kind of apparatus (fig. 2). A vertical wooden wall (W) is fitted together with a kind of roof (D) covered with linen. In the wall there is an opening (O). Under this shelter the person is posed, in such a manner that the light comes through the opening (O). The upper part (D) of this covering keeps off the high upper lights. The opaque parts of the walls and roofs, &c., in the glass houses have their advantages, and the lighting is regulated without curtains, by placing the person more or less into the lighted or the dark part of the glass house. Shelters and reflectors help in adequate degree. With respect to this, it is to be remembered, that in America are found glass houses without any curtains (for instance, Sarony's atelier at New York), and that yet very fine pictures are made in them.

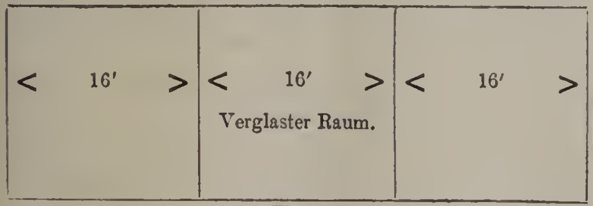

Fig. 1.

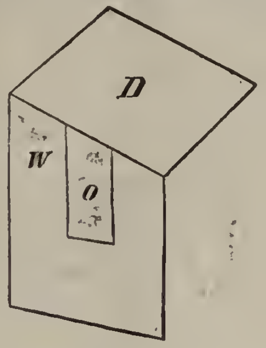

Fig. 2.

A matter of importance in many glass houses is the movable platform, by which the person, without altering the position, can easily be moved to and fro (backwards and forwards), and turned round, in order to seek the best profile and the most favourable place for lighting.

Rembrandts are made here in a very simple manner. By fig. 3 the arrangement is shown. W is the open glass wall, G the person, A the apparatus, *h* the background, and *r* a very light reflector. This arrangement is the same as communicated by Mr. Prümm to the *Photographische Mittheilungen*. Top light is hereby applied in very small degree. In large establishments, instead of one glass house are often found two of them, and work is done in both at the same time. Mr. Scholten, at St. Louis, has two glass houses, or, if you will, it is only one, which is divided in the middle into two parts. But, remarkably, one of the two glass fronts is situated to the south. It is protected by white curtains against the sunlight, which naturally, is shining on it the whole day. Also Mr. Gurn

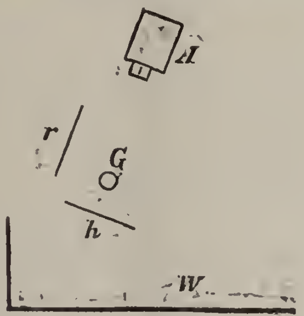

Fig. 3.

at New York, has a north light and a south light glass house, the latter covered with matted (half transparent) glass. Gurney himself confessed to me that he preferred the north light glass house.

The portrait lenses in American ateliers are mostly Dallmeyer's; triplets I seldom saw. For working out of doors, landscapes, reproductions of paintings and prints, &c., our German Steinheil lens enjoys general application; besides this I found Dallmeyer's rapid rectilinear lens employed for the same purpose. When working in a wide angle, Zentmeyer's lens is much used, which, like our pantascopic, includes an angle of ninety degrees, and which works excellently. Zentmeyer, a brave German, enjoys an excellent reputation in making microscopes, and I saw there capital instruments of this kind. The short focus of the Zentmeyer's lens has many advantages. I saw Mr. Benecke, secretary of the Photographic Society at St. Louis, working with such lenses without adjusting the focus in the camera. His camera was expressly made for it, and the focus was adjusted once for all. The picture was taken by seeking the right direction by looking above the camera. Such a camera was employed by Mr. Benecke even without a slide; he brings the whole camera into the dark room or tent, and puts the plate in.

The American slides are somewhat different from ours. The shutter can be taken completely out. The opening rising by it, is shut by a spring, to prevent the light from passing in. I find this arrangement more practical than our shutters, which commonly consist of two parts, joined by hinges. Everyone knows how soon these hinges are worn out by use, and holes and slits for the entrance of light are the consequence of it. I also saw at Mr. Benecke's a very simple and practical slide (fig. 4). Two parallel glass rules (ll) are lying on a prominence of the slide-frame (r) and are movable, as to the size of the plates. The plate (P) is put with the margins on these rules, lying loose, of course, but sufficiently pressed fast against them by the springs of the cover when it is shut. By this arrangement a very clean working is possible, as the plate does not come in contact with the wood of the slide.

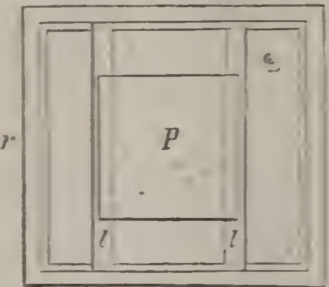

Fig. 4.

By the kindness of Mr. Grasshoff we have received the following sketch of a practical form of glass edges, that are used in America for slides. The common glass edges are plain, and the silver containing drops are permitted to pass from the plate directly to the wood of the slide. Here, however (fig. 5) on the lower edges, there is a glass prominence (a) that is laid over the wood of the slide, and thus the drops are prevented from passing to the wood near the fastened part (b). In the meantime this prominent angle is inclined, so that the fluid drops off from it at c, to gather at the base of the slide. Thus the plate never touches the wood. These edges are made of founded glass.

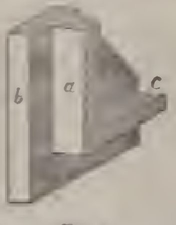

Fig. 5.

Enlargements are made in the same manner at St. Louis as everywhere in the United States. Mr. Fox, president of the Photographic Society at St. Louis, uses for it a process of developing which gives very intense pictures. He prepares a common paper with a solution of—

Iodide of potassium	... ...	2 grammes
Bromide of potassium	... ...	1 gramme
Whey (filtered)	... ...	100 grammes

After drying, the paper is sensitized in a nitrate bath of [illegible] grammes (in winter 40) nitrate of silver to 500 grammes water with some drops of glacial acetic acid; then immediately extended moist on the frame. Exposure of 15 seconds was enough for enlarging a thin negative by sun-light and with a common portrait lens without any great preparations or arrangements. After the exposure the picture was immediately visible, and by the following developer it became very intense:—

Pyrogallic acid	... ...	8 grammes
Glacial acetic acid	... ...	150 "
Water ...	... ...	1,000 "
Bromide of potassium	...	1 to 2 "

To develop the picture, Mr. Fox put it on a large glass plate, and poured the developer over it. When it was sufficiently intense, he poured over it a weak solution of kitchen salt to stop the farther development. After well washing, toning is done with gold, and fixing as usual.

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SOLAR CAMERA PRINTING.

BY PROF. J. TOWLER, M.D.*

THE solar camera, in the hands of an adept, is an instrument of great importance, and can be rendered very profitable. The operations with this camera are in some respects distinct from those that have preceded, and requires special study. In the first place, the negative for the work in question is different from the ordinary negative, the latter, in general, is much too dense. More skill is required in posing the sitter, so as to obviate all harsh shadows, which may be tolerated to a certain extent in very small pictures, but which look horrid when magnified. The skill of the real artist might be here called in requisition, and used with great advantage. As soon as the sitter is illuminated with a soft light avoiding extreme contrasts, the next thing is to make the exposure and develop the picture. The exposure is slightly longer than for the common negative, whilst the development is slightly shorter. The collodion, too, may be with advantage somewhat thinner than that which is used for every-day work; at all events, it must be perfectly homogeneous—that is, free from all coagula and insoluble particles—and it must flow evenly and concrete without leaving any streaks or reticulations. By exposing the full time, or over, the developer brings out the picture easily and without any forcing, that is, the middle tones and the shadows appear almost simultaneously. As soon as the picture is complete as regards light and shade, although still very thin, stop all further development by washing and fixing. Now examine the negative by holding it up between the eye and the window. How shall we know whether the negative will be suitable or not?

In the first place, the picture must be accurately in focus—that is, uniformly sharp, as far as possible; this is, of course, a *sine quâ non*—an indispensable condition.

Secondly, the picture must be complete, that is, not only the shadows must be brought out, but likewise all the middle and even the highest tones must make their appearance, in fine, let me repeat, the picture must be completely developed; this is almost an indispensable condition.

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* *Philadelphia Photographer.*

Finally, the bars of the window must be visible through the darkest shades, or, if the negative be held a short distance above a page of print, the shades ought to be so thin as to allow you to read the print through them; this is an indispensable condition.

The negative that stands this scrutiny is carefully dried, but not varnished.

There are two different sorts of solar cameras in the market, namely, one sort in imitation of the well-known solar microscope first brought out by Woodward, in which the camera is stationary, being fixed in a window, with the necessary appendages of movable reflector in front, and stage behind for holding the paper to be printed on. This is an excellent solar camera for summer operations, but is about useless in winter in high latitudes. The other sort of solar camera in the market is represented by that manufactured by Rœttger, of Philadelphia. This form of camera can be used throughout the whole year. It would be useless to describe these cameras, for if you possess one you will know how to use it, and if you buy one you will be shown how to use it.

The negative is placed, wrong side up, in its appropriate holder, whilst a sheet of paper is fixed on the movable screen behind to receive the picture. Bring the sun into the axis of the lens and focus. I generally use a small telescope or opera glass for this work, especially with the Rœttger's cameras.

N.B.—You must be very careful to get the movable screen that holds the paper not only perpendicular to the axis of the lens, but in such a position that, if a circle were drawn around its centre, every point of that circle shall be equally distant from the middle of the lens. If you neglect to verify this point your work will be a failure.

We will now proceed to the preparation of the paper. The brightest and most vigorous prints are obtained on the ordinary albuminized paper; and, consequently, when the season is favourable, and the sky unclouded, preference will be given to this paper for solar printing, when the prints are not to be retouched or coloured. But during the winter season, and the early spring and late autumn months, when the sun's power has diminished in vigour, and is frequently obscured by clouds, it is not advisable to attempt printing on albumen paper, because the exposure will be too long to be convenient, and may frequently have to be interrupted, during which time the paper may have changed its dimensions and no longer lies flat. In such a case as this another mode of printing has to be pursued.

Printing on Albumen Paper.—The paper is sensitized the usual way, but on a strong silver solution, for two or three minutes; that is, until it lies perfectly even on the solution and the corners have settled down. The object in this is to get the paper sufficiently saturated with moisture; and the reason for using a strong silver solution is to coagulate the albumen, and not dissolve it off from the paper, which a weak solution would do. The sheet is then taken up from the fluid, and allowed to drain for a few minutes by holding it in the hand over the bath. It is then laid flat on a piece of plate glass, the albumen film being upwards. This plate of glass must be strong enough for the purpose, quite flat, and covered on one side (the back), with a clean piece of white paper for focussing upon, unless you have two plates of glass, one for focussing and one for the sensitized sheet. The plate intended to receive the sensitive paper previously receives on the back, all round, and half an inch wide from the edges, a coating of thick gum solution; its dimensions, too, are each one inch less than those of the paper. This plate is supported on a small box, less in size than itself, which is placed on a table. The gummed edges are beneath. In this position the sheet of paper, still moist, is laid upon the plate in such a way as to allow half an inch of paper to project all round. Now cut a small square from each corner of the paper with a pair of scissors, and fold the projecting edges down, and then back upon the gummed surface. There is no need of once touching the sensitive surface with the fingers whilst performing this operation; still the latter requires dexterity and nicety. You must be sure to make each edge of the paper adhere all along the gummed edge of the glass, and to press all the extraneous gum away from the edge, otherwise it will creep round the edge of the glass to the front, and cause you trouble afterwards. When once accustomed to it, the operation is more quickly performed than described.

As soon as the paper lies quite flat on the glass, and has been made to adhere firmly on the back by means of the projecting edges, the paper is allowed to dry spontaneously. When once dry, the surface will be perfectly flat, and without the slightest wrinkle or corrugation. It is now ready to be placed on the focussing screen, in the selfsame position previously occupied by the focussing plate of glass. Let it here be firmly fixed with thumb-screws or otherwise, as may be most convenient.

The sun is now turned on, and the printing operation is commenced. The time is proportioned to the work, and may vary from half an hour to two or three hours. Print until the picture is entense enough for the subsequent operations of toning and fixing, which I need not describe.

Printing on Plain Paper by Development.—This mode of printing is decidedly preferable to the preceding, taking the whole year through, and especially so when the prints have to be retouched with india-ink or to be coloured. Select for this sort of work the heaviest Marion's paper, and salt it with chloride of ammonium, citrate of soda, and gelatine, as described by me in this journal. It is better to salt a few quires at a time, and have a stock on hand.

The sheets, when salted and dry, are sensitized on a bath of tartaro-nitrate of silver, the component parts of which are also given in the article just referred to. Each sheet, as soon as it has sufficiently drained, is placed (as before described) on a plate of glass, and fixed along the edges on the back with gum.

This system of fixing each sheet of sensitized paper, whilst moist, on glass, will repay you amply for the trouble.

The use, too, of a chloride paper is much to be preferred to that of an iodide or bromo-iodide paper; for, in the first place, the prints are more vigorous; secondly, the paper not being so extremely sensitive, the manipulations are more easily performed; and, finally, there is no idea of stains, or fear of the picture penetrating to the back of the paper in this process; but there is considerable risk with the iodized or bromo-iodized paper in these respects, as those know who have made experiments in this direction.

Exposure.—In the depth of winter, the sun being bright and unobscured, the latitude being between 42° and 43°, an exposure of ten minutes I find to be amply sufficient; less might be adequate for the purpose; more is no injury—on the contrary, it is an advantage. But if the sun is shining brightly, it is well to get all the work out of it, and expose as many sheets as possible, each for ten minutes, and then finish the rest of the work, by development, in the evening. In this way you may easily print four or five prints per hour.

Development.—Each print is first cut along the edges of the glass plate, and thus separated from it. It is then immersed, with clean fingers and carefully, in a bath of dilute aceto-gallate of lead, as follows:—

Water	32 ounces
Solution of gallic acid (2 grns. per oz.) ...	3 ,,
Solution of acetate of lead (30 grns. per oz.)	½ drachm

Acetic acid sufficient to clear the solution.

As soon as the paper is thoroughly moistened in this solution, transfer it to a large glass plate, picture side uppermost, and develop the print completely with the following:

Solution of gallic acid (2 grns. per oz.) ...	2 ounces
Solution of acetate of lead (30 grns. per oz.)	20 drops.

Acetic acid sufficient to clear the solution.

The plate is held over a warm stove during the development, care being taken that the paper is thoroughly covered with the solution. In about ten minutes, or a quarter of an hour, the picture will be intense enough—you can make it as intense as you wish. The moment the picture is advanced as far as you desire, wash it thoroughly under the tap, and on both sides; after which it is immersed in a dish of clean water, until you are ready to proceed to the operation of toning. This operation, however, is altogether unnecessary, if the picture is intended for the artist to finish with India ink or colour. In this case, the print is placed at once—that is, immediately after the thorough washing—in the fixing solution of hyposulphite of soda. It is always well to keep the prints in motion, at least every few minutes, otherwise a deposit might easily form on the whites, which is not easily removed afterwards by washing.

There are other modes of printing by development to be found in several of the text-books, some of which are quite worthless; others, on the contrary, are used. To these I may recur on some other occasion.

TO WORK AND KEEP A NITRATE BATH NEUTRAL.

BY WILLIAM BELL.

First make the following solution: Nitrate of silver, four ounces; water (distilled), forty ounces; iodide of potassium, six to ten grains. Mix, set in the sun to blacken twenty-four hours; filter, and add twenty grains of cyanide of silver; set again in sun twenty-four hours, shaking occasionally. Test for acid with blue litmus paper. If there is no acid present, filter and use. Should it still be acid, add more cyanide of silver, shaking well, and keep it in the sun until neutral. After the bath has been in use for some time, it becomes acid from the collodion, and is less sensitive. Take it out of the bath-holder, boil for an hour, then add sufficient water to make the solution milky; set it in the sun twenty-four hour hours, filter, and add nitrate of silver to bring it up to its original strength. Now add the cyanide of silver (sun and shake as before), being sure to add enough to neutralize all the acid present, which it will do better than any other alkali, as it leaves no fogging effect, necessitating the use of acid to make it (the bath) work clear. The advantages of the above bath are shorter exposures, less harsh high lights, softer shadows, better draperies than when an acid bath is used—advantages not to be despised.

To make cyanide of silver, take of—

Water	4 ounces
Cyanide of potassium	2 ,,

Dissolve, and to the cyanide solution add a strong solution of nitrate of silver until no more precipitate forms. Thus you have the silver in excess. Throw the precipitate into a filter, wash well by percolation, dry, pulverize, and bottle for use.

Alcohol contains more or less organic matter, and that is often the cause of fogging when a neutral bath is used. Rectify the alcohol as follows, with stock silver solution, No. 1:—

Finely pulverized nitrate of silver	50 grains
Distilled water	60 drops
Alcohol	4 ounces

Shake well, filter, and use. Now, to every thirty-two ounces of alcohol add fifteen drops of silver solution No. 1, sun the alcohol for twenty-four hours, filter, and use for making collodion.

The following salted or iodized collodion is being used with this bath with fine results:—

Ether	5 ounces
(Silvered and sunned) alcohol ...	5 ,,
Bromide of zinc	15 grains
Iodide of cadmium...	15 ,,
Iodide of ammonium	30 ,,
Papyroxyline (Liesegang's)	50 to 80 ,,

the object of the above bath and collodion being to purify both from all trace of organic matter, which, when present in either, requires the use of acid to overcome, thereby entailing insensitiveness. See that your dark-room, box, and plate-holders are light-tight, or light-proof.—*Photographic Mosaics.*

KEEPING AND PREPARING COLLODIO-BROMIDE SOLUTION.

BY M. CAREY LEA.*

I have lately made a number of experiments on the influence upon the sensitive collodio-bromide of the time that intervenes between the addition of the solution of nitrate of silver, and the coating of the plates—induced partly thereto by the complaint of a friend that he objected to tying himself down to the necessity of making the plates because he had mixed the materials. This does not, however, seem to be a grave matter; still it may be sometimes inconvenient to decide twelve hours beforehand that one will prepare a set of plates, and may be more satisfactory to proceed after a shorter interval.

The result of my trials showed that the sensitiveness of the plate certainly increases with the time of keeping the mixture—at least up to twelve hours, as I have already stated—but that very satisfactory results may be got when the mixture is kept but six or eight hours; that the time may be further reduced by increasing the quantity of nitrate of silver used by one grain to the ounce. In this way good plates can be made, keeping the mixture only two to four hours.

A trial was also made in which the sensitive mixture was used immediately after mixing. It received a very thorough shaking up for four or five minutes, and was then at once filtered and coated. The result was a very transparent and insensitive film, which required an extremely long exposure to receive a good image. A rough estimate, based on actual trials, led to the conclusion that such a plate required from twelve to twenty times the length of exposure which was sufficient for a plate made with sensitive mixture kept for twelve hours.

There is no advantage in exaggerating the shaking which the sensitive mixture receives. As the nitrate is added in solution, there is not the same need for violent agitation as when the powdered material is introduced.

I find that a good shaking of about three minutes after the solution is introduced, and another (which need not be so long) a couple of hours before the mixture is used, is what does best. More shaking is more likely to do harm than good. The addition of the nitrate in solution is extremely favourable for the chemical combination, not only because the mixing is immediate, but because of the higher temperature at which the ingredients meet. The addition of the hot alcoholic solution raises the temperature of the whole mixture, so that the bottle feels warm to the hand. This effect is advantageous.

Dissolving the Nitrate.—Some experimenters speak of a difficulty in getting the nitrate completely dissolved. If any such difficulty is experienced, it is best not to add at once the whole of the alcohol, but to reserve a small portion. The best utensil is a small thin glass flask of three or four ounces capacity, which, if kept for this use only, and corked lightly between times to keep out dust, will not need washing. A brass holder, such as is made for test-tubes, is convenient for holding it, and keeps the fingers clear of silver stains. Having introduced the nitrate of silver or fine powder and the alcohol, heat over a glass flame till the alcohol boils, agitating gently; remove for a minute, continuing the agitation; then heat again, and so on. If, in two or three minutes, the whole is not dissolved, pour off the liquid into the bottle of collodion, and add the reserve portion of alcohol, and repeat. Even if it be necessary to add a little more alcohol than directed, this will not be important, provided the excess is small.

Of course, the first portion of alcoholic solution contains nearly all the nitrate of silver, therefore the collodion, after receiving it, will need to be thoroughly shaken; it must not wait for this shaking for the second portion of the solution. It is also desirable, in pouring the solution into the collodion, to pour it straight into the liquid, and not down the sides of the bottle, or the cold glass may cause the nitrate to crystallize. The power of strong alcohol to hold nitrate of silver in solution depends almost upon the heat, and as the temperature falls the nitrate rapidly separates. It is, therefore, an object to get it quickly mixed with the collodion before allowing it to touch a cold surface.

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* *Philadelphia Photographer.*

Coating Plates.—The proportion of materials which I have given in the formulæ published are suited to cold weather; in hot, a considerable addition of ether will be necessary; besides which, some plain collodion may be advantageously added, avoiding, however, to make the mixture too thin. Of course, a smooth plate must be got, and, provided this be accomplished, the thicker the mixture can be applied the better; still, the thinning with ether must be sufficient to enable the operator to avoid making cloudy plates.

In very hot weather it is, of course, more difficult to apply the collodion smoothly, and this has led me to make many trials to find the easiest and most effectual method. It has proved to be as follows:—Pour on plenty of the collodion mixture, and get it over the plate as rapidly as possible. Next, instead of bringing the plate gradually up to a vertical position whilst rocking, keep it very nearly horizontal—rocking, of course, steadily—and inclining it only enough to slowly carry off the excess of collodion. This gives easily an excellent plate. It will not be necessary to "send back" the collodion; if the temperature of the air is high, it will be found difficult to do so without making ridges.

As soon as the collodion is set sufficiently to avoid danger to the film, it is plunged into the pan of water.

Clean Hands.—With a little care, the collodio-bromide process may be worked from beginning to end without staining the fingers or need of applying strong chemical detergents. The only precaution needed is this: after coating a set of plates, examine the hands to find if there are any white marks of sensitized collodion that has run off the plate, and, if so, remove it with a bit of paper or rag moistened with ether. If this be neglected, these marks will blacken in the light, and then are very difficult to get rid of; but if attended to, as directed, they come off with a touch. Then wash the hands—first with strong solution of hyposulphite, and then with soap; pumice soap is the best. The development, being conducted entirely without silver, is not liable to stain the hands; or, if brownish pyrogallic marks are found on the ends of the fingers, they may be got rid of with a weak solution of caustic soda.

A MODIFIED DRY PROCESS.

BY J. F. PLUCKER.*

The principal difficulty encountered in all dry processes is that of developing the image. Sometimes the picture appears slowly, sometimes suddenly; while, in many cases, the film being but partially moistened, allows of the formation of air-bubbles and other defects. It also happens that with one and the same developer different results are not unfrequently obtained with similar plates.

By the employment of alkaline developers in combination with an intensifier of acidified nitrate of silver, results may be obtained in no way inferior to those of the wet process, either in regard to detail in the shadows or sensitiveness of the plates.

After essaying several of the known processes—such as that of tannin, tannin and dextrine, morphine, glycerine, &c.—I decided upon adopting the method of M. Gaillard (tannin and dextrine), with certain modifications, and this has given me very perfect and certain results. The change I have effected consists in the addition of gallic acid to the last sensitizing bath, and in the partial development of the picture by means of ammonia vapour. Gallic acid produces, in conjunction with ammonia, a brown precipitate where the light has acted upon the film; and, at the same time, partially reduces the bromide of silver contained in the plate.

In this way the dry process is made to resemble, to some degree, the wet method. In the latter a nitrate of silver solution is present on the plate during its exposure, and this, while instrumental in forming the atoms of silver of which the picture is composed, exercises an equalizing effect over the surface of the film. For this reason it is possible to obtain detail in shadows and foliage without fearing the too thickly covering up of the high lights. On the other hand, as the ordinary method of developing in the Gaillard process is with pyrogallic acid and aceto-nitrate of silver, during the time the slightly exposed portions of the film are being brought out the more isolated parts are rendered immoderately dense; this accounts for the very powerful contrasts seen in all landscape and foliage views produced by dry processes of this kind.

In my modified method gallic acid exercises the same moderating influence as that exerted by the free nitrate of silver in the wet process.

My method of preparing and developing the plate is as follows:—

The bromo-iodized collodion I employ is prepared according to M. Gaillard's formula; the gun-cotton may be replaced by papyroxyl, and a mixture of old and new collodion yields the most uniform films. Before the glass plate is coated with collodion it is well to cover the margins with albumen, using for the purpose a brush dipped in that liquid, and drawing the same carefully along the surface of the glass so as to form a streak about two millimetres broad. The albumen may be kept for a considerable period if a little carbolic acid is mixed therewith. This precaution of applying albumen to the plates prevents the film from leaving the glass when being subsequently washed and manipulated.

The silver bath I use is similar to that of M. Gaillard:—

Water	100 parts
Nitrate of silver	10 ,,
Acetic acid	10 ,,

The washing of the plates takes place in three dishes filled with rain-water, the same being filtered before use. The plates are moved about in the water so as to be thoroughly washed.

The preserving liquid is thus compounded:—

Water	1,000 parts
Dextrine	50 ,,
Tannin	20 ,,
Gallic acid	3 ,,
Alcohol	50 ,,

A few drops of essence of cloves is afterwards added to prevent the formation of mildew.

The development of the image is conducted in the following manner:—

The plate is, in the first instance, bordered round with india-rubber solution (rubber dissolved in benzole)—or, in default, with a negative varnish not containing alcohol—and then submitted to the action of ammonia vapour. For fuming purposes I employ a box of wood or zinc somewhat longer and narower than the plates, and furnished with a well-fitting lid; the negatives are leant against one of the sides of the box, prepared side downwards, the bottom of the compartment being lined with blotting-paper, upon which, every time a fresh plate is put away, a few drops of fluid ammonia are sprinkled. The operation of fuming requires but a few minutes.

To bring out the image it is now necessary but to breathe uniformly upon the plate; the traces of the picture appear slowly or quickly, according to the rapidity with which the moisture of the breath condenses. In summer it is often difficult to cause any moisture to settle upon the glass in this manner, and in lieu, therefore, of breathing on the plate, the latter is, immediately after fuming, dipped into warm water of 50° to 60° Cent. temperature, when the picture becomes at once apparent.

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* *Bulletin Belge.*

After rinsing the plate an alkaline developer is applied, thus made up:—

Water	100 parts
Carbonate of soda and ammonia ...	5 „
Bromide of ammonium	0·25 „

To the above is added, immediately before employment, a drop of pyrogallic acid solution (half per cent. strength).

Another mode of proceeding is to expose the plate again to the action of ammonia fumes, and then to wash once more and to apply several times the above developer. This manner of working necessitates but short exposure, and yields very considerable detail.

The first or second method of development should, therefore, be used according to the character of the object depicted and the period of exposure; but, in any case, the development is finished off with a mixture of pyrogallic acid and nitrate of silver.

The advantages of this mode of development may be thus summed up:—

(1.) The picture is more quickly finished, the exposure is shorter, and the result more harmonious.

(2.) The kind of development may be chosen according to the nature of the image when it appears on the plate after immersion in warm water, or breathing upon it.

(3). If it is desired to preserve the plates before development, and it has not been over-exposed, it is necessary merely to fume and breathe upon the same, and place it in a suitable locality until its perfect development may be proceeded with.

(4.) The total loss of the latent picture is always avoided.

PURE WATER AND THE NITRATE BATH.

BY ELBERT ANDERSON.*

M. What is the cause of crystallization?

A. There you have me. I don't know. It is supposed that the atoms and molecules which make up a body of a crystal are possessed of polarity.

M. What's that, when it's fenced in?

A. It is supposed that the opposite sides of the atoms are like two poles of a magnet, and that this action or force, as it is called, compels the atom, in assuming its place in a crystal, to maintain a certain direction as respects the contiguous particles. In the case of pure silver and chemically pure nitric acid, the solution, after evaporating to dryness and fused, can be used at once.

M. How will I know when it is fused?

A. When the silver is fused, it will have the appearance of a heavy oil or syrup, which will remain perfectly quiet on the bottom of the dish without bubbling or steaming. Whilst in this state, dip into it a slight splinter of wood or a bit of clean straw. If it (the straw) immediately take fire, the silver is fused enough; if not, continue the heat until it does inflame. When cool, the fused mass may be dissolved in pure water with the aid of gentle heat, and, as before mentioned, used as if it were crystals. I would urgently recommend you to use a capacious bath-holder, certainly not less than two gallons, however little work you do. I use two of four gallons each.

M. Yes; but for me, who do so little negative-making as compared with you, why should I use so much? These large baths are rather expensive.

A. There you make a great mistake. The smaller your bath the more it costs you.

M. Now you are speaking paregorickally.

A. You mean paradoxically, perhaps.

M. Well, paradoxically, then. What's the difference in the long run?

A. I will explain myself. 1st. If you use a small bath, it will soon get out of order, and cost you time to fix it again. 2nd. It becomes out of order from organic matter, introduced by dust from the air, dirt from the plates, and chemical compounds in and on the collodion film. 3rd. It becomes soon over-iodized. 4th. It requires frequent filtering, and every time you filter you encounter severe loss: (1), by that portion of the bath remaining in the bath-holder when it is poured out to filter; (2), by that portion which remains in the saturated filter; (3), by that portion that remains in the bottle into which it is filtered; (4), by fusing after it is badly contaminated; (5), by its losing strength rapidly, thus requiring strengthening, causing an unequal action, to say nothing of the grave error of adding new silver to an old bath. Now, all this is obviated by the use of a large bath, which will work uniformly for a long time, and yield cleaner work.

M. All right; a large bath be it.

A. I would further urgently recommend your using two or even three baths, so that when one shows signs of failing you may go on with another, until the sick one is cured at your leisure.

M. What are these signs of failing?

A. Never mind that now. We will work our bath until it gets out of order, then will be time enough to attend to that department.

M. Are rubber bath-holders all that's suitable?

A. I am hardly a fair witness to examine in this case. I am prejudiced, having formed an opinion.

M. And no doubt an opinion as is an opinion.

A. I would advise you, however, not to use a rubber bath, except for occasional use out of the gallery, taking dead babies, grave-stones, and such. I only make this exception because it is less likely to get broken, is much lighter, and convenient to carry the solution in, having a water-tight top. I use Lewis's patent. I had them made expressly for me, with this little device; namely, I ordered them double width, consequently they are scarcely any larger than a two-gallon bath, and yet hold four gallons. They generally leak at first; look out for that. Fill them with water until the wood soaks up tight, wash them out with hot water and soda, finally with cold water, and turn them over to drain. Having measured the capacity of your bath-holder, dissolve nitrate of silver in water until your hydrometer indicates forty grains of silver to the ounce of water in summer, and forty-five grains in winter. Make up rather more than twice the contents of your bath-holder.

M. By-the-bye, I want to ask you something that is a great puzzle to me.

A. Go it.

M. My hydrometer is a double one; that is, it indicates thirty when it really means sixty. Why is that?

A. When I first had occasion to use this instrument the same thing struck me also, and I asked all my photographic friends and several druggists the reason. Strange to say, none of them could tell me. Being of an enquiring turn of mind, I continued my researches, and even the importers could not enlighten me. Finally, I asked a maker in Fulton Street, New York. "Well," said he, "I don no. I've allers made 'em so; but when yer ax me why, then yer got me." I intend to ask Wilson under the Sphynx column.

Now reduce your solution with water to thirty grains to the ounce. This solution has the property of dissolving and retaining in solution a certain amount of iodide of silver. This capacity of the solution to dissolve iodide of silver is in proportion to, and increases with, its strength.

M. Here, easy now. Say that over again.

A. Take, for instance, four ounces of a solution of nitrate of silver in water, of any strength—say forty grains to the ounce—next dissolve ten or twenty grains (the quantity is immaterial) of iodide of ammonium in water, add a little of this at a time to the four-ounce solution of silver; immediately a dense precipitate, of a yellowish colour (iodide of silver), is thrown down, and floats on the surface of the solution; but, upon shaking the solution, the iodide is dissolved, and the solution becomes clear again. Repeat this until the solution refuses to clear and remains milky, when some of the iodide will fall to the bottom. The solution is now said to be over-iodized; that is, it contains more iodide of silver than it is capable of dissolving, and the surface falls to the bottom. It will, however, filter out perfectly clear, the surplus iodide remaining in the filter. The solution is now said to be saturated. If you now pour this clear solution into an equal quantity of pure water, it immediately throws down one-half the iodide of silver, the solution becoming again milky, and is, in fact, over-iodized as before; yet it has given up half its iodide, because, as I told you, the solution is only capable of dissolving iodide of silver in proportion to its strength, and, as it is now reduced one-half, it cannot retain but half the iodide. If we now add nitrate of silver to make up the strength to forty grains this milkiness will disappear, and the solution will remain as at first. You will understand by this, then, if we iodize the bath to saturation in the first place, every collodionized plate dipped in it causes the iodide in the film to come in contact with the silver solution, forming iodide of silver on and in the film; but, as the bath is already saturated, you cannot add more without the surplus being precipitated and held in suspension (not solution, mark you) in the bath, and, in a short time, this surplus increases to such an extent that these little floating particles attach themselves to the surface of the plate. After the plate is developed and washed these little crystals show but little, but when the plate is put in the fixing solution they are dissolved, and leave clear and transparent spots; sometimes a plate will contain millions of them, known under the name of pinholes, each and every plate making the matter worse, and no better, fast. On the other hand, if the bath contains no iodide when the plate is immersed, and the iodide of silver is formed on the film, a portion of it is immediately dissolved by the solution, thus giving a spotty appearance, and yielding an imperfect negative.

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* Continued from p. 427.

M. Just so.

A. Therefore the proper thing to do is to divide the bath in halves, and saturate one-half, filter out the precipitate, and mix it with the other half. Now test with litmus paper. It will generally be found to have an acid reaction, caused by the silver not being perfectly freed from acid in its manufacture. If acid, dissolve bicarbonate of soda in pure water, and add this, little by little, to the solution, which will again turn milky from precipitated carbonate of silver. When it shows an alkaline reaction it may be put out in strong sunlight, without filtering, until it becomes perfectly clear.

M. You believe in sunning a bath, then?

A. Well, not in your sense. We will come to that all in good time. Finally, it is put into an evaporating dish, and boiled down to forty grains to the ounce, and filtered. Now make a mixture of one part nitric acid, chemically pure, and three parts of distilled water; add this, little by little, until the solution shows a decided acid reaction; fill up your bath-holder, and your bath is ready to be tested. To do this, however, requires further chemical preparations, which must be deferred till our next meeting.

Correspondence.

BI-MEDALLION PORTRAITS.

Dear Sir,—As you have very favourably noticed the new style of portrait I sent, which you name the "Bi-Medallion" (a name, I think, more appropriate than what I have given them, viz., "The Doublet"), I hasten to comply with your request for details, and now lay before you my mode of producing the pictures, which I hope will be the means of adding to the exchequer of my professional brethren.

I think, sir, you will admit that the means are very simple, and, what is more, involve no extra expense, like that in the case of the Diamond Cameo Portraits. I further think that some of the objections to the latter are absent from mine. I find, in practice, that I am enabled to get two satisfactory views of the face with every one of my sitters; but we all know how impossible it is to get four pleasant views of every face.

First, then, the camera. I use a camera with sliding back for double cartes. In the opening at the back I place a piece of blackened cardboard, with an oval cut out in the centre, which I fasten by means of four black pins. This is all that is required to be done to the camera. I now place a chair in front of the lens, and request my sitter to sit there. If it is a lady and gentleman, I always ask the lady to sit first, and pose her head so that it will be looking towards the right (which, I believe, according to the rules of art, will be correct), as, in the finished portrait, the lady will be to the left of the gentleman, and looking towards him. I then adjust the head-rest and light. This is another important thing, and, in this style of portraiture, a great advantage; for instance, in taking a group, we put our sitters looking towards each other. And what is the result? Why, that one has the shadow on the wrong side of the face. Now, sir, I am enabled to correct this, and by this means: I use a side light on each side, and have dark and light blinds; thus, in taking the lady, I draw the dark blind on the right side, and *vice versa* for the gentleman, and my shadow is right in each case. And now expose. Then put the gentleman to sit, placing his head against the rest and looking towards the left; there is no occasion to focus again, but merely to shift the dark slide. The proper distance must be ascertained previously; it must be so that the rays will overlap without injuring the image. I then proceed to take them over again, but reversing the views of the face; care must be taken here, or the result will be that the sitters are looking away from each other; always take the lady first, and then you cannot err. By the use of a half-plate I am enabled to get four portraits on one plate, and choose the most pleasing to print from. This concludes the operating part.

Now for the printing, which consists of cutting out a bi-medallion mark. I use old prints which have stains, &c., blacken them in the sun, and proceed to cut out the mask as follows:—I draw a line straight across the paper vertically, not in the centre, but a little distance from the top, so as to get my ovals in the centre; I then take a ninth size matt, place the straight top level with the line (but not in the centre of the paper), and cut out the oval; I then shift it to the other side, letting the inner side overlap the other oval, and cut out again, by which means I get my ovals in contact; I place this mask on my negative, and print.

I think, sir, I have exhausted all necessary information on the subject; but if any of your readers think they could better understand by seeing one of the cartes, I shall be happy to forward a specimen on receipt of seven penny stamps. I enclose two more for your approval. You will admit, I think, that both portraits of the lady are pleasing, and, as far as I can see, neither one better than the other.

Apologizing for taking up so much of your valuable space, I am, sir, your obedient servant, H. C. Lee.

Blaenavon, September 7th, 1870.

Proceedings of Societies.

Manchester Photographic Society.

The first monthly meeting after the recess was held at the Memorial Hall, on the 8th inst., Mr. M. Noton, V.P., in the chair.

The minutes of the May meeting were read and passed, and Mr. R. A. Bradley elected a member of the Society.

The Chairman said he was sorry there was no paper to read, and urged the members to exert themselves to interest the monthly meetings, and, above all, to bring their productions, good or bad, to show.

The Secretary exhibited a few prints from negatives taken on the River Wharfe, and also several cloud pictures taken on collodio-albumen plates.

Mr. Atherton gave notice of his intention to propose, at the annual meeting in October, that the following be added to the rules of this Society:—

"That each member shall have the privilege of introducing a friend at any monthly meeting *once only* during each session."

The meeting closed with the usual complimentary votes.

C. Adin, Hon. Secretary.

Talk in the Studio.

Nadar's Balloon and the War.—We understand that Nadar, the well-known Parisian photographer and æronaut, has offered his services to watch the movements of the enemy around Paris from a balloon, and that experiments have been in progress with a captive balloon in the Place St. Pierre, Montmartre. Such a means of observation will command a view on every side of the city, and communications may be rapidly made with the authorities.

Suicide of a Photographer with Cyanide.—An inquest was held a few evenings ago at St. Martin's Vestry Hall, Charing-cross, respecting the death of Louis Ferrie, a Frenchman, aged 45. Louis Ferrie identified the body as that of his father, a photographer, carrying on business at 27, Coventry

Street, Haymarket. He had been in a desponding state of mind lately, owing to a depression of trade, which preyed on his mind. Marie Lucas said she was an assistant to the deceased in his business. On Saturday she went into his room, and found him sitting on a chair, and he said, in French, pointing to a bottle which contained cyanide of potassium, "I have taken death." She immediately sent for a medical man. Mr. William Haines said on Saturday morning he was called to the deceased. He was past all aid, and died in about three minutes. He died from the effect of poison, cyanide of potassium. The son of the deceased said he found the following letter under the bottle of poison referred to:—"It is not possible for me to stand on my legs; I suffer so much that I prefer to finish immediately by death. I ask my family and friends to forgive me. I can no longer live in the position in which I am placed." The Jury returned a verdict of Temporary Insanity.

Green Glass in the Dark Room.—Mr. Carey Lea, writing to our Philadelphia contemporary, says:—"Continued use confirms me in the good opinion which I have expressed of the substitution of green for yellow glass, and those who have tried it have been, I believe, all pleased with it. The relief to those who have weak eyes is very great, and the contrast of the soft green light with the irritating yellowish red is very agreeable."

The Photographer as he is and as he should be.—The photographer, as he should be, is anxious to do whatever elevates and ennobles his art. He charges a fair price for his pictures, and does not try to undersell his neighbour. He is never found during work hours or after dinner standing at his own door smoking or chewing, and, perhaps unawares, staring his own customers out of countenance. He is always courteous and polite to sitters, and does not chuck young ladies under the chin instead of asking them to raise the head. He does not consider it necessary to eat his dinner with stained fingers, in order to let people know that he *is* a photographer and is very busy. He never takes a picture in his shirt sleeves, or smokes in his rooms, and never makes himself too impertinently familiar with lady sitters. His operating rooms are always kept in order and sufficient clean glass is kept on hand; nor is he ever in danger of mistaking his cyanide for developing solution. He never takes objectionable pictures, or such as he would not exhibit in his showcase. He does not get out of patience and out of humour with children when his collodion works slow or the day is dull; nor does he swear at the weather or his bath, but sets about investigating the cause, knowing that he has himself only to blame. He is always ready to praise another's pictures when he knows them to be worthy of it. He is never in debt to his stock-dealer or frame-maker; neither has he his gallery mortgaged, or settled on another, in order to avoid a just debt. He does not use another man's name, in order, fraudulently, to attract customers. His showcase never contains pictures not taken by himself or at his own establishment, labelled "All those pictures were taken up stairs," which, of course, no one doubts, as most galleries are *up stairs*. His pictures were never taken as though he had foresworn all regard for gracefulness or expression.—*American Journal.*

To Correspondents.

A. Stanton.—The double sulphate of iron and ammonia consists of the sulphate of iron and sulphate of ammonia mixed in their equivalent proportions, and recrystallized. To prepare, mix 139 grains of protosulphide of iron with 66 grains of sulphate of ammonia in a small quantity of hot water. Then set aside to evaporate and crystallize. The salt keeps well, not readily oxidizing. In using it for a developer, it is necessary to remember that the iron present is the reducing agent, and that, therefore, a larger proportion of the double salt is necessary than of the simple sulphate of iron. The double sulphate is kept by most photographic chemists and dealers.

B. F.—The black powder precipitated from your old toning bath on adding iron is metallic gold in a fine state of subdivision, mixed with some oxide of iron. Wash it well with dilute sulphuric acid to remove the iron, rinse, and then dissolve the gold powder in aqua regia, to convert it into chloride of gold. We need not repeat instructions here, as you will find them in more than one of the Year-Books, which, as you have a complete set, you can easily consult. 2. Your view lens is not well suited for architectural work, as it will render upright lines with a barrel-shaped curve. Your portrait lens with a small stop will serve.

Who.—The photographer who copies a copyright photograph, or any one who publishes or sells it, is responsible for the piracy, and your remedy is against him.

H. H. Brunton kindly forwards two examples of the "Rembrandt" portrait for "J. T.," who a fortnight ago expressed a wish to see the style. If he forwards an addressed envelope we will post them to him. The light and shade are a little too abrupt, but they are brilliant, and will illustrate the style.

J. E. Wigan.—Tin vessels, unless thoroughly well coated with varnish, are not suitable for washing photographs; but it is probable that your prints fade rather from imperfection in the fixation than in the washing. A thorough washing is, of course, necessary, but more prints fade from faults in fixation than in washing. It is important that the hyposulphite solution should not be used a second time; that it should be neutral, or alkaline; and that the prints should be rinsed after leaving the toning bath, before immersing in the fixing solution, to remove any possible traces of acid. If these precautions be taken, and you fix in a solution of the strength you name, and for the time you name, and wash carefully, your prints will not readily fade. The copy of the News from which you copied the address on your letter must have been not less than eleven years old. The address, as you will see, is now 15, Gough Square, and the Editor is no longer Mr. Crookes.

Vivimus Vivere.—Any form of copying of a copyright picture without permission of the owner is an infringement of copyright, and it is probable that in regard to engravings and other valuable works of art infringement would be attended with serious risk. In regard to the illustrations of such periodicals as *Punch* it is probable that no objection would exist to their use for magic lantern purposes. Perhaps it would be the best plan to ask permission, which it is probable you would obtain. All such pictures are, however, undoubtedly copyright.

F. V. L.—The ether you added to thin your collodion had been acid, and this caused the liberation of iodine, hence the red colour you describe. It is a little unwise to tamper with collodion by adding ether of unknown quality. The best plan is to thin with new collodion. Possibly the collodion may not be much worse. You will ascertain best by trying. Possibly the addition of a bromide may be useful; but try the collodion first. If it be slower, and give a harder picture, then add from half a grain to a grain of a bromide to each ounce.

F. L. R.—Your cabinet portraits are in many respects exceedingly good. The lighting and modelling are fine, the pictures are brilliant and delicate, and the tone is good. But they are sadly marred by the vignetting. Few things are more offensive in this way than a dark background vignetted with a vignette glass of a regular oval shape. It gives a heavy, vulgar effect to the picture. For vignetting, a light background is imperatively necessary; and then the gradation should not assume a formal, regular shape, but should be delicately broken and irregular, in a form which will best suit the picture, each print requiring more or less different treatment, which judgment and taste alone can decide. If, instead of vignetting, you had employed an oval mask with a sharp, clean edge, the effect would have been much better, seeing that the background is so dark. We prefer the warmer tones.

Philo-Photo.—The powder enclosed in your letter is carbonate of silver. You have added too much carbonate of soda to your nitrate bath. If you were to go on adding you would precipitate all the silver as carbonate. It is only necessary, previous to sunning, to continue adding the carbonate of soda solution until a slight permanent turbidity is produced in the silver solution. Carbonate of silver may be redissolved by means of nitric acid, and from the large proportion of silver you appear to have thrown down, it may be worth while to redissolve in that manner.

F. B. M.—The metallic silver stains in the shadows of your negatives, seen, as you remark, chiefly when the back of the plate is examined, are due to the use of imperfectly cleaned glasses. Your suspicion that the extreme thinness of the collodion is the cause is partly true, nevertheless. With a thin collodion an imperfectly cleaned glass more readily causes stains than with a thick sample Short exposure and long development also aid the production of stains if the glass is not perfectly clean. 2. The maker will doubtless give you full information if you write to him. We do not remember the price.

R. L.—It is largely a matter of personal taste whether a tent or a manipulating box is best for field work. Perhaps, for small plates, the manipulating box is best. It is less trouble to carry, and, after a little practice, the working is not difficult. Where the photographer has an attendant to carry and attend to apparatus, the tent is most convenient, especially for anything larger than whole plates.

G. Jones.—The varnish received. Thanks. W shall take an early opportunity of trying it.

⁂ The absence of the Editor from town, attending the meetings of the British Association for the Advancement of Science, will delay the answers to many letters until next week.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

	PAGE
The British Association	445
Platinum for Intensifying	446
American Correspondence	447
The Royal Cornwall Polytechnic Society	448
Photography in America. By Dr. Vogel	449
Dr. Van Monckhoven on Lichtdruck	449
Note on Reflectors and Backgrounds. By W. Kurtz	450
On Atmospheric Perspective. By A. Meydenbaur	451
Military Photography	452
British Association for the Advancement of Science	453
Correspondence.—Acid Silver Bath a Cause of Failure with Washed Paper	454
Proceedings of Societies.—The Bristol Photograph c Society	455
Talk in the Studio	455
To Correspondents	455

THE BRITISH ASSOCIATION.

The meeting of the British Association which has just losed at Liverpool was, as might have been anticipated in onnection with such an enterprising town, in many respects one of the most successful and brilliant of the forty nnual gatherings which have been held, although, as egards the special branch of science in which our readers re chiefly interested, it has been the most barren meeting hat we remember. The presidential address of Professor Huxley was of that type, and upon a subject, which could ot embrace photographic allusion. The presidential ddresses at the Association we have noticed may be ivided into three classes: in one the president devotes himself to a recapitulation and criticism of the work of the Asssociation itself; another devotes his address to an exposition of the progress and influence of general science uring the year; whilst a third addresses himself to an xamination of the history and present position of the special cience to which his own attention is chiefly devoted. Of the atter class was the president's oration this year, Professor Huxley's inaugural address being a summary of the history and present position of the doctrines pertaining to the origin of life, any summary of which would be out of place in these pages. The eloquent lecture of Prôfessor Tyndall on the "Scientific Uses of the Imagination," and hat of Sir John Lubbock on "Savages," were devoid of pecific photographic allusion. In the sections there was not only no photographic paper, but, with one exception, none with other than the most remote photographic allusion or bearing of any kind.

The exception to which we refer was an admirable paper by Mr. Spiller, in the Chemical Section, on certain methods of discriminating the nature of the fibre in various textile fabrics, in which several new tests were described. The test proposed for silk was hydrochloric acid, in which silk s perfectly soluble, whilst cotton and woollen remain quite unaffected by it. Mr. Spiller has found that on taking the solution of silk in hydrochloric acid and neutralizing with ammonia, he obtains a new organic chloride, which may not improbably find valuable application in photography. Already he has ascertained that, used for salting a plain paper, it gives considerably increased sensitiveness. In collodio-chloride of silver it will probably be found to give both sensitiveness and vigour. We hope to report on the subject shortly.

At the soirees, with the exception of the last, photography was unrepresented; and there was no photographic exhibition. All this is somewhat singular. When the British Association held its meeting in Manchester, some years ago, an exhibition was opened containing an excellent selection of fine photographs. In various other towns, since, there have been distinct photographic exhibitions, or large contributions of photographs to the exhibitions of pictures opened at the time. It is not from lack of photographic ability and photographic interest in Liverpool, as the final soiree proved. There is an active society in vigorous existence, there are many able and enthusiastic amateurs and first-class professional photographers at Liverpool; it was the home of the first provincial photographic journal issued, and one which has continued in existence to this day. The only mode of accounting for the photographic barrenness of this meeting is a supposition of a decline of interest in our art in those having the management of the Association itself, so that no initiative is taken in such matters; and, with the best facilities, without some energetic initial impulse, nothing is ever brought into effective being.

At the last soiree, held in St. George's Hall, photography was, fortunately, better represented, thanks to the contributions and efforts of Mr. Forrest, Mr. Herbert Robinson, and some others. Mr. H. P. Robinson's fine collection of his large landscapes and fine sea pieces, the unusual beauty of which surprised many and won the admiration of all who saw them, were probably the pictorial photographic gems of the soiree. Mr. Robinson's brother, Mr. Herbert Robinson—or, rather, his firm, Messrs Robinson and Thompson—added much to the interest of the display by a varied contribution of unvarying excellence. Especially noticeable here was a large panoramic view of the famous Runcorn Bridge and Viaduct, produced by combination printing. This is one of the finest examples we have seen of the mode in which a photograph of the kind, instead of being a mere record of engineering architecture, acquires, by the use of taste and judgment, without any sacrifice of value in this respect, a high artistic interest, and becomes a really fine picture. We hope to see it in the November exhibition of the Society. Messrs. Robinson and Thompson exhibited some examples of coloured work of rare excellence, the coloured portrait of a pretty little girl being amongst the most perfect things we have ever seen in this branch of the art. In a scientific point of view, the photographic triumph of the soiree was found in a collection of micro-photographs, contributed by the same firm. These consisted of upwards of two hundred photographs, which were assigned a distinct room, the only defect of which was its limited size compared with the large number of visitors drawn by the interest of the photographs, involving, at times, very inconvenient crowding. The subjects were arranged by Mr. Thomas Higgin, an enthusiastic amateur in microscopy. Many of the objects are amplified as much as eight hundred diameters, without loss of any kind.

The crispness and perfectness of definition throughout, and the exquisite definition, are simply marvellous. The negatives have been entrusted to Messrs. Robinson and Thompson for printing and publication, and their work is in every way well done.

Mr. Forrest's contributions to the soiree consisted chiefly of examples of photography on opal glass, a substance he introduced to the attention of photographers twenty years ago, but which is only now—or, at least, of late years—gaining anything like general attention. Of the examples here shown, many were coloured by Mr. F. Sargent, and illustrate how successfully opal glass may vie with ivory for delicate coloured work. Some of the specimens produced by Mr. John Eastham, of Manchester, were exceedingly charming; they consisted chiefly of enlargements, and, when examined as transparencies, were found to be coloured at the back. On the use of opal glass we shall have more to say shortly.

Mr. O. R. Green's fine large examples of the collodio-bromide process were so fine that we shall hope to see some of his work at the London exhibition in November. We may express the same desire in relation to the views in France exhibited by the Rev. T. B. Banner, some of the pictures possessing especial interest as representing towns which have become famous during the war. Mr. J. Henderson's fine series of ten by eight landscapes, comprising some capital views of Haddon Hall, Vale Crucis Abbey, Rievaulx Abbey, and other similar subjects, excited much admiration; as did the fine Indian stereographs exhibited by Joseph Guyton, Hon. Secretary of the Liverpool Society, of which several of the gentlemen whose names we have mentioned are active members. W. Murray had a fine series of leaves and ferns, produced by direct printing. An excellent series of prints, illustrating the structure of mountain limestone corals (natural size), were shown by James Thompson, of Glasgow. A new and very interesting application of photography was seen in connection with Mr. E. B. Martin's records of steam-boiler explosions, where models in metallic foil had been constructed from the photographs taken soon after the disaster. There were likewise a series of Mr. Warren de la Rue's lunar photographs, and a comparative set of the eclipses observed in India and America during the two past years.

Before closing, we cannot help asking the question: Is it not possible to give a renewed interest to photography in connection with the British Association? For many years it has found a constant place in sections A and B (these are the departments devoted to physical and chemical science), and many excellent papers have been from time to time read before the members, and it cannot fail to be a matter of regret with many, that amid the wide range of subjects comprehended by the Association, photography as a branch of science should drop out of the running. A contemporary has recently proposed that a photographic conference should be organized to hold its annual meetings at the same time and place as the Association, in manner similar to the pharmaceutical conference established some years ago. Desirable as would be the consummation of such a suggestion, we fear that the interests of the subject and the number of persons sufficiently concerned are scarcely sufficiently extended to give any hope of such a result being brought about; but we cannot help thinking that steps would not be difficult for securing a renewed and permanent photographic interest in connection with the Association. A very simple plan would consist in the presentation every year of a report of the progress of photography as a science, in the course of which questions of interest in a scientific and practical point of view might be raised and discussed. If no individual be found spontaneously to undertake this task, we think that it would be quite competent for the Photographic Society to initiate the matter by the appointment of a reporter for the purpose. How far any question relating to photography may demand specific investigation involving special expense, we do not now pause to consider; but we may remark, in passing, that the machinery of the British Association would, we believe, permit it to devote grants for any purpose of the kind which its committee might sanction as of sufficient importance. That the Association should appoint a reporter until the volunteer presentation of reports has shown the matter to be sufficiently important, we can hardly hope; but the matter once satisfactorily brought before the suitable authorities, we think it highly probable that its recognition by the Association might be secured, and we violate no confidence in saying this view is shared by several members of the Photographic Society's Council, who are influentially connected with the Association. We commend the question to those interested in the progress of photography, and in the maintenance and elevation of its status as a science.

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PLATINUM FOR INTENSIFYING.

In the course of various experiments we have recently been making with the salts of platinum for toning and enamelling purposes, it has occurred to us to try it as an intensifier for negatives, and with very satisfactory results.

The solution used is very similar to that employed for toning purposes, but we prefer it a little stronger for intensifying. For the convenience of the reader, we once more describe the preparation of the solution. For intensifying, we made a one-grain solution of bichloride of platinum, which, as usual, was decidedly acid, containing free hydrochloric acid. Applied to the negative in this state, it increases the intensity somewhat in appearance, but the image is bleached, or the colour is made lighter, by the rapid conversion of a portion of the image into chloride of silver, so that the printing intensity is practically reduced. In the course of exposure, this chloride of silver becomes black, and the intensity much increased; but the uncertainty attending these changes renders the operation undesirable. If, however, the platinum solution be neutralized by the addition of carbonate of soda, and then slightly acidulated with nitric acid, the action is in every way satisfactory. If used in the neutral or alkaline state, the process is slow and uncertain, very little platinum being deposited; but the addition of just sufficient nitric acid to redden litmus paper starts the action at once.

The first negative we treated was a somewhat trying test. It had been dried and put aside some months before, but was insufficiently vigorous. Its film was moistened with alcohol and water to secure a permeable condition, and the one-grain platinum solution, treated as we have described, was poured on. It intensified slowly, but with beautiful regularity, producing perfectly harmonious increase of vigour, the lightest half-tones receiving additional deposit as well as the highest lights. As a rule, there is such a tendency in negatives intensified after drying to accumulate intensity on the lights, and not on the half-tones, that it becomes difficult to avoid excess of contrast and hardness in negatives so treated. In this case, the intensification seemed as harmonious and satisfactory as it could have been if it had been effected immediately after developing and before fixing the negative. With a freshly produced negative the intensifying should be effected after fixing and washing, and a more dilute solution may be employed. We found that one grain of the platinum salt in four ounces of water answered well.

With a slight application a greyish black tone is secured, just slightly increasing the intensity. By prolonged application a fine deposit of platinum black is obtained, which possesses great printing intensity. There is, in all cases, a little chloride of silver formed, which blackens during the first exposures, and gives a slightly increased vigour. The intensity is not much reduced by varnishing. The special value of this additional intensifying resource is the perfect harmony of the deposit, and the absence of coarseness in the deposit and of harshness in the contrast commonly produced by many modes of intensifying.

AMERICAN CORRESPONDENCE.

A New Size—American Solar Enlargements—Photography and Business—Dr. Vogel's Departure—Frame for Sensitizing Photographic Paper.

Although I believe it would be very hard now to undermine the hold that the cabinet size has upon the people here since it has become fairly started, still the introduction of another "new size" is possible, and its success probable. I believe the first example of the cabinet size that came to America was sent to me by my esteemed friend the Editor of the News. Since then it has grown wonderfully into favour, and is now the rage; but, withal, it was intended to accomplish a work which it has so far failed to do entirely. The main arguments in its favour were to vanquish "the contemptible, degrading, crowded little card pictures," and to lead the photographers and the *people* to something "higher." The latter it has most likely effected, for I am quite sure that since its introduction the photographers and the photography of America have wonderfully and rapidly improved, and so have the tastes of the people become more cultivated and appreciative of good work. But the "little cards" continue to exist, and are a great pest and annoyance to first-class photographers. This fact I need not attempt to establish by argument: all know it to be true. Now, if we have reached too high in hoping to make the cabinet a substitute for the carte, why not, meanwhile, however, pushing the cabinet all we can, go over the ground again, and try a *medium* size—one that will entirely fill an ordinary envelope, still be convenient for mailing, and cause very little change in the apparatus required to make the ordinary carte? This is being done in this country at present, the new style being dubbed, the "Bon Ton Carte." I enclose you a sample print (mounted), and shall be very glad if it is the first one you have seen, for then we shall be nearly even.

The size of the new card, as you will see, is 3¼ inches wide by 5 inches long, outside measure; the print 3$\frac{1}{16}$ by 4½ inches. The proportions are neat, and sufficiently portable for transmission through the mail in an envelope. A half-plate is large enough for the negative, and a good half-lens will do the work. For double negatives a $\frac{4}{4}$-plate will take two figures, or an 8 by 10 four figures. Albumen paper will cut up right for them without waste. One can use a quarter-plate for single figures, a half-plate for two, a four-four for four figures, &c. Few extras are required in the way of apparatus, as I have said, so that all photographers can give the size a push together, which was not the case with the cabinet size to so great an extent. Its appearance is very pretty, and I am not sure but it is going to give a death-blow to the carte. We are now making cartes mostly of the upper figure only, and the heads almost as large as an ordinary whole size. The new size offers a chance to make such much more satisfactorily, and certainly with a great deal more taste.

American Solar Enlargements.—I mail you, herewith, six or eight whole-sheet solar enlargements, made by M. Albert Moore, of this city. One of them is of a young missie, life-size from the negative, which secured the gold medal recently offered by Mr. Moore for the best solar negative; a second is of an old mill near this city, erected in 1683, one year after William Penn came among us; a third, of a wood scene; a fourth, a view on the Hudson; and the others, life-size portraits from negatives by various American photographers. The landscapes were made by an amateur friend, Mr. J. C. Browne. The prints were not all made especially for you, and are specimens of Mr. Moore's usual work. You observe that they possess "delicacy, definition, and modelling," and are praiseworthy in "force and colour," seemingly possessing as many good qualities as we could reasonably expect in contact prints of that size. How they will look to our British *confrères* I cannot tell; and I am only persuaded to send them as examples of solar camera work by the remark that our good friend Dr. Vogel made to me at Cleveland; namely, "We have nothing like these in Europe." Mr. Moore has laboured very hard to *excel* in his special department, it is true, but there are many good solar printers in this country. Mr. Moore uses no complicated apparatus, but simply the "direct printer;" *i.e.*, without reflector, such as are now made by Rœttger in this country, and which are, no doubt, familiar to you. If you visit his establishment on a clear day, you will there see eighteen of these curious looking instruments, marshalled in formidable array on the roof, with their one great eye pointed toward the sun, silently but surely doing their work. It is a curious sight from the street, and more so when the attendants are busy adjusting the great monsters. The looker-on unacquainted with their purpose maddens himself guessing "what those fellows are about." Did you ever, when a boy rambling about the country among the hedges, come suddenly upon a nest of young birds, and notice, at your approach, how they would stretch out their necks and open their great mouths at you, screeching for food? I can compare these solar cameras, when in operation, to nothing else. Their great necks are stretched out as if struggling to get away from their awkward bodies, and they seem eager for more and still more of sunlight, that they may swallow it, not to increase the size or beauty of their own bodies, but to produce results that are beautiful.

A few notes on Mr. Moore's method of working may not be out of place. He prints out wholly in the camera as a general thing, very seldom developing a print. He prefers a whole-size negative, although quarter and half-size are much used here. All the heads, and the old mill I send you, are from whole-size negatives, while the wood scene and the view on the Hudson are from half-size.

When the prints are to be worked in colour or ink, of course they are made on plain paper. In other cases albumen paper is used. Mr. Moore's salting solution for plain paper in hot weather is as follows:—

Water	1 ounce
Gelatine	1 grain
Muriate of ammonia	2½ grains

(In cold weather use 4 grains of the latter.)

On this solution float the paper two minutes. Floating is preferred to drawing the sheet through the solution two or three times, although either will answer.

Solar printers generally experience much trouble during very hot weather in keeping their paper from turning yellow. To avoid that, float on a 30-grain plain silver bath, forty-five seconds for albumen, and twenty seconds for plain paper. If the weather is excessively hot, use the silver twenty grains only to the ounce; in cold weather increase it to forty grains. Fume ten minutes with strong ammonia, not diluted. For toning use chloride of gold, slightly acid, and neutralized with a saturated solution of borax, adding a pinch of table salt. This solution will not bleach or turn grey the blacks, or measle the prints, as do some toning solutions; and, in the toning, the greatest care must be exercised, for, print sharp and carefully as you will, all may be quickly ruined by careless toning; and, as you have, perhaps, noticed, the majority of solar prints are disagreeable from this very cause.

I was surprised to find that Mr. Moore uses the old-style quarter-size Jamin portrait lenses for printing. The focus may be changed to suit the field of many sizes of negatives, and can be as well adapted to the whole-size as to the quarter-size. In fact, Mr. Moore considers them the only tubes necessary, except in printing from 8 by 10 negatives, in which case nothing can excel a half-size lens of the same manufacture. I hope I have not enlarged too much on this interesting subject; and while the solar camera is very much used in this country, still the majority of pictures, from 14 by 17 down, are made from contact negatives.

Photography and Business.—Contact with Dr. Vogel for a few weeks has given me a better idea of Europe and its photography than I have ever been able to gather from all the pictures I have seen from there, and from the photo periodicals. He saw with European eyes, and what he observed was peculiar and novel to him I noted down. He was much struck with the variety of styles made in even our best establishments, and with the quantity of negatives made in a day—both bad things for quality, unless many hands be employed. The matter of variety is becoming one of serious consideration in our large cities, and if the variety increases I am not sure but there will have to be a division of labour made. To illustrate: A first-class gallery here is expected to produce all sizes, from life-size to the carte (which means about twenty sizes): rustic pictures, "Rembrandts," solar negatives, porcelains, ambrotypes, and so on. The first customer wants a carte; the next an 8 by 10, when an entire change of apparatus, accessories, and perhaps light, has to be made; the next will want a carte again, and perhaps the next, and the next; then a porcelain; a solar negative; cartes again (whole-size); ambrotypes; and so it goes on all day. I wonder ofttimes that the work made is as good as it is. It is done, too, as it were, by steam. A man to pose, a man to *expose*, another to develop, and still a fourth to coat the plates. It is lively work, and sixty-five and eighty negatives a day are often made thus. When does such a busy man get time to think, and experiment, and perfect himself? If he only made two or three styles, and devoted himself to their perfection, he would do better; and the matter of dividing the styles—one to take a few, and another a few, and them only—is already being agitated here. There is need of it in some directions.

Dr. Vogel's Departure.—Dr. Vogel left us last Thursday (August 25th), and will probably see you before this reaches you. He left us with regret, and we parted with him with great regret; yet his duties called him home, and he left us. He has made many warm friends, who would gladly welcome him to a permanence here if it could only be. He sailed in the "Samaria," and there we bade him farewell; and, while our steamer sailed from his, we saluted until our handkerchiefs appeared no larger than a good-sized pinhole in a negative. May he reach home safely, and soon find peace there, although accompanied by the horrible results of war.

Frame for Sensitizing Photographic Paper.—Some photographers but seldom make large prints, and find it very expensive to risk large dishes and a quantity of solution for such work. A dodge recently patented here may be of use to such parties. A frame, rectangular in form, is made in two sections; the inside or contact edge of one is made with a tongue, and the other with a groove to correspond. Now place the tongued section on the table; lay the sheet of paper (which must be larger than the frame), on it; press the grooved part "home" over it; and there you have a dish. Now pour in the solution, float it about a sufficient time, pour off at a lip at one corner, and stand up to dry; the paper may be then used as required, and is said to dry very smooth.

The hot weather still continues with us.—Very truly yours, EDWARD L. WILSON.

Philadelphia, September 1st, 1870.

THE ROYAL CORNWALL POLYTECHNIC SOCIETY.

[FROM OUR OWN CORRESPONDENT.]

THE awards of the judges given by telegraph a fortnight ago were necessarily stated in brief terms, and as the exhibition was not complete—one or two cases having arrived the same day that our notice was written—some pictures escaped mention.

The first silver medal for the best landscape was awarded to Messrs. Robinson and Cherrill's "Outward Bound." Perhaps it would be more in keeping to term such a photograph a seascape, very little land being in the view, water and clouds composing the picture. The foreground consists of a shingly beach, as is found on the coasts of Sussex and Kent, with the reflux of the last wave; further on we have a mighty breaker combing over to spend its force on the shore; on the horizon a steam ship is wending its way down channel, the dense volumes of smoke which are blending with some heavy clouds showing that she has just been firing up. The collection of pictures shown by these gentlemen are certainly wonderful productions, and, from their size—sixteen inches by ten inches—mark a strong advance in instantaneous work. The moon in "The first hour of the night," and the kittywakes in "The beached margent of the sea," will, when seen, perhaps, raise up again the sceptics and the controversy that we had about the "sea gulls." Messrs. R. and C. are not only in strong force in these sea views, but they have also some exquisite wooded landscapes, the most noticeable, perhaps, of which is Culverdon Down, which, had it been a little darker, might easily have been mistaken for an engraving; in fact, the negatives of these and the fine sea pieces of Colonel Stuart Wortley, combined with the new heliographic process of Mr. Courtney, will drive the engraver hard to hold his own. Colonel Wortley's pictures are certainly most splendid specimens of art; the bright track of light upon the waves make a strong resemblance of a moonlit sea, and upon each, as you gaze, the poetry of the scene is realized.

Mr. Sanderson obtained the landscape second silver medal for his (collodio-albumen) "Pass at Aberglaslyn," a most carefully finished picture; but his "Haddon Hall from the Meadow," and the "Heron's Pool, Lledr Valley," were equally good.

Mr. Cocking obtained his first bronze medal for a little photo-tint scene, "On the Avon." Colonel Wortley was awarded, as last year, a first silver medal, for his large portrait art studies; the judges affixing to "My Queen" their fiat, which is, most certainly, the finest picture—round, and extremely soft, the others having a somewhat woolly effect, arising, perhaps, from the negatives having been taken by a single lens. Mr. Hubbard also received the award of a first silver medal for his "Stolen Moments," which has already been described in the PHOTOGRAPHIC NEWS. It is a most clever picture, and more like a photograph from one of the old masters than a photograph from a real scene. Mr. Briggs' extremely pretty portraits again obtained a first bronze medal, and the same award was made to Mr. Diston's "Young Artist," a clever little picture of a youth in a studio sketching, surrounded by all an artist's paraphernalia. Mr. Diston's "Peep Show" is also a very effective little picture.

The photo-crayons were very good, those exhibited by Vandyke and Brown being rich and bold, forming a strong contrast to the soft though pleasing style of Mr. Preston. A case containing a large number of fine examples of the Woodbury process, including a frame of some beautiful transparencies sent by the inventor, did not reach the exhibition in time for the judges' eye, although, in such a case, some straining might have been a courtesy, and a second judging allowed, as has been the case in some previous years under similar circumstances.

Mr. Courtney sent some specimens of a new patent process, consisting of copper and steel plates engraved, and prints struck off from them; the plates are covered, I believe, with a pigmented gelatine, exposed under the negative, developed, and the picture so produced eaten into the medal by a combination of electrical etching. A first bronze medal was awarded in the amateur section. "The Receiving Room, Pau Castle," by Captain Paget and Lieut. Alvey, was marked with a second silver medal; and the "Upper Lake Fall, Hembury Park, Cheshire," by Captain Foster, a second bronze. Miss Nixon's photograph from a painting representing an incident in the life of John Wesley was highly commended.

PHOTOGRAPHY IN AMERICA.

Rutherford's Modus Operandi—Astronomical Photography in Boston—The Scovill Manufacturing Company—Osborne Establishment—New Printing Process in America.

BY DR. VOGEL.

Dear Sir,—In my first letter from New York I gave a short report of my adventures on the first few days of my arrival. Since then I have completed my observations on different points, and I will give you some remarks in addition to this first letter. I told you of the astronomical photographs of Mr. Rutherford. These photographs are taken, in general, on albuminized collodion plates. The preliminary albumen coating prevents the contraction of the collodion film. The manner of albuminizing the glass plates for negatives, instead of cleaning them in the ordinary way, is very common in the American photographic practice. Black, in Boston, a very able photographer, employs it constantly. He pours on the well washed and still wet plates a solution of white of egg in two quarts of water, and allows it to dry. The albumen solution is prepared fresh every day; the plates coated in this manner keep clean for a month. Rutherford employs the albumen coating for avoiding contraction of the collodion film. Osborne, in his photo lithographic work, had also tried this albumen coating, but he is not so satisfied with it; he sometimes finds spots produced in this manner. It is a curious thing that in all Rutherford's pictures of the sun the margin is darker than the middle. This is obvious during the development, the middle coming out first, the margin a little later. For explaining this I suppose that the chemical rays in the sunlight are absorbed partially by the atmosphere of the sun. The rays from the margin must travel a longer distance through this atmosphere than the rays from the central part, like in our earth atmosphere, the sun-rays, if the sun is in the horizon, must penetrate a longer space of the air than if the sun is in zenith. For this reason they are more affected than the latter. In taking star pictures, as Mr. Rutherford has done, it is very often difficult to determine whether any fine black spot in the plate is a very star picture, or a common black spot as is very often visible in collodion plates. Rutherford employs a very ingenious plan to distinguish the difference. It is this:—He takes one picture; afterwards he moves the telescope a little, and gives a second exposure. In this manner he gets plates in which the pictures of all stars are *double*, and therefore it is very easy to distinguish star pictures from ordinary spots. For getting the exact direction of east and west in his pictures, he arrests the telescope when the second picture is taken. The stars going through the field of view of it make a fine line on the plate, and this line gives the exact direction of west. I saw, by Mr. Rutherford, lately, a plate taken in this manner from Arcturis in Bootes, in about six minutes' exposure. He used a strong developer, with eight and a-half per cent. of sulphate of iron. Besides Mr. Rutherford, also Professor Wenlock, in Boston, takes sun pictures. His manner is a little different from Rutherford's. Wenlock employs a lens of forty feet focus, which yields, without any enlargement, a picture of four and a-half inches diameter. This lens is screwed on a large ordinary iron pipe, horizontally put on a long wall. On the back of this pipe is the arrangement for the focussing glass and the dark slide as in ordinary cameras; on the front of this is the lens. Ahead of this is placed a heliostat, with a mirror, which reflects the sun's rays exactly on the lens. The lens is covered with a cap-stop, with about one inch aperture. For exposure, an ordinary wood board, with a small rectangular aperture in it, is moved by the hand between lens and mirror. The exposure is instantaneous.

Certainly this is a by far more simple manner than the employment of a long telescope with a heavy clockwork, very easily disordered by any accident. In general, the American atmosphere is by far more favourable for making astronomocal observations and photographs than the European. In Germany we have only 21 absolutely clear nights yearly, on the average; while in Boston, as Professor Wenlock states, there are 120 clear nights yearly.

Amongst the other establishments of photographic interest in New York, I may mention first, the Scovill Manufacturing Company, whose store is nearly the junction of the two first business streets of New York—the Broadway, and the continuation of the Bowery, the Park Row. The Scovill Manufacturing Company works generally wholesale in all photographic articles; and the stock of photographic cameras, of different sizes and of excellent kind, is perhaps the largest in the world. The cameras are very solid, but not so heavy as the English or German cameras. Instead of the leather bellows usual in Europe, there are introduced here india-rubber bellows. The corners in the dark slide are of ebonite, and the front board of the dark slide is a flat board without hinges; this board is drawn out and removed wholly during the exposure. The small aperture through which the board is drawn is closed afterwards by a spring arrangement. I prefer this contrivance to the divided front-board with hinges, fixed on the dark slide, which very easily gets into disorder. The American tripod stands are, in general, more solid and simple in their construction than the European stands. Besides articles made in America itself, the Scovill Manufacturing Company keep in stock a great many of imported articles. In general, all photographic articles, plain paper excepted, are made in America now; but there is imported a good deal of German albuminized paper and English lenses, especially from Dallmeyer and Ross; also, for views, the Steinheil lenses.

Another very interesting establishment, not in New York, but not far from it, in Brooklyn, is Osborne's photo-lithographic establishment. Osborne works in all kinds of drawings without half-tones, geographical maps, engravings, architectural and engineering drawings, &c. The principle of Osborne's process you have already described in your journal. One of the chief points is the securing of a perfectly clear and dense negative. Osborne reinforces the negative by dipping it, after fixing and washing, in a solution of iodine and iodide of potassium in water. Herein the silver picture is transformed into a picture of iodide of silver. A very weak solution of cyanide poured on this picture perfectly cleans all shadows, and the picture is afterwards transformed into a dense sulphide of silver picture by pouring on sulphide of ammonia.

New printing processes are not yet much practised in America. The Albert process will be introduced soon by Mr. Bierstadt, in New York, and Proide, in Milwaukee; and the Woodbury printing process by Mr. Carbutt, from Chicago. The proofs I have seen from Mr. Carbutt are excellent, and the new process will certainly be important for all photographic publications on a large scale. Among all proofs of new printing processes, the Woodbury prints are the most similar to silver pictures or carbon pictures, and a great advantage is, that the process is also applicable for glass pictures; and this will give a new impulse for the fabrication of transparent stereos and magic-lantern slides.

DR. VAN MONCKHOVEN ON LICHTDRUCK.

Dr. Van Monckhoven has recently devoted some attention to the process of Albert-type and Lichtdruck, and, without strictly following the directions already published in regard to these methods, has independently examined into the subject, and now makes known the various manipulations which he has himself employed in producing the printing blocks. His recommendations are summed up as follows:—

Some plate glass, at least five or six millimetres in thickness, is ground with very fine emery powder, procured by washing ordinary emery in water, decanting the liquid after standing for five minutes, and subsequently collecting the precipitate therefrom. The surface of the glass is afterwards cleaned with alcohol, and covered, on the ground face, with a solution of albumen, consisting of equal parts of white of egg and water beaten to a snow. But a very slight film of albumen should remain on the plate, which must not be allowed to dry in a horizontal position, but vertically, leaning against the wall, and standing upon a pad of blotting-paper to absorb any excess of albumen.

The plate is now immersed, for the space of a minute, in a solution composed of—

Water...	1,000 grammes
Chromic acid...	50 „

and, when taken out and well drained, is washed in a bath of distilled water. The gelatine coating is now applied, formed of—

Gelatine	10 grammes
Sugar-candy	5 „
Neutral chromate of potash ...	5 „
Distilled water	100 „

It is poured on to the plate in the same manner as collodion, but, of course, in absolute darkness. Covered with this solution, the plate is carefully placed, in a perfectly level position, in a sheltered spot (in a box with paper sides, for instance), and exposed to a regular temperature of about 50° Cent. When dry, the surface is finished, and ready to be printed upon under a negative.

The operation of printing is conducted in the ordinary manner—that is to say, in a pressure-frame behind a negative, like an albuminized print. The period of exposure is, as may be supposed, very variable, but averages about a quarter of an hour; and it is upon the precise degree of exposure and upon the quality of the gelatine that the success of the result depends.

On removal from the printing frame the image upon the gelatine is washed in several changes of very cold water (15° Cent.), and then allowed to dry spontaneously in the atmosphere. It is now ready for manipulation in the lithographic press, and with this commences the chief practical difficulty of the method.

Upon a lithographic stone is cemented (either with marine glue or plaster of Paris) a stout sheet of glass, which should be made to adhere firmly to the stone. On this is placed the gelatined plate, the two glass surfaces being made to adhere by means of a few drops of water sprinkled upon the stouter plate, which serves as the support. To proceed with the operation of printing, we in the first place moisten the gelatine surface by passing over it a sponge dipped in water and squeezed out, and then apply the ink. This is done by means of a leather roller like those used in lithography, the skilful application of the same being of great importance; a sheet of paper is subsequently placed upon the inked gelatine, and a print pulled off in the ordinary fashion. Of course, the mere operation of printing is the affair of the professional printer, and upon his capacity and experience must depend, in great measure, the quality of the finished impressions.

Such are the operations involved in carrying out the Lichtdruck and Albert-type processes. The directions in which improvements may be effected by competent people are in the investigation of the gelatines and chromates. The very variable quality of the many gelatines met with in commerce is exceedingly embarrassing, and the material may, indeed, be considered as capricious in its character as gun-cotton in the manufacture of collodion. The question of chromates is also a subject deserving of study. Bichromate of potash is not sufficiently soluble, nor is the bichromate of ammonia. The neutral chromate—of a clear yellow—is, on the other hand, extremely soluble.

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NOTE ON REFLECTORS AND BACKGROUNDS.

BY W. KURTZ.*

As I find that the Rembrandt effects have received some attention in Europe, I permit myself a few remarks upon the subject. In these pictures I had under consideration the lighting up of dark shadows much more than the question of backgrounds, which latter I always strive to render suitable to the nature of my model. Light, dark, and very dark backgrounds are all used in my studio. The method of lighting up is, as I have already remarked in the *Philadelphia Photographer*, a well known one. All kinds of models cannot be depicted under the same aspect, for the simple reason that all faces do not appear to the best advantage under similar circumstances.

The artist and photographer has learnt, from an experience of eighteen years of "sitters," that of certain heads a better picture can be obtained by approaching the model more closely on the shaded side; but, inasmuch as in a photograph thus taken the shadows would be too deep, and the high lights far too marked, such an image would be useless. The effect in nature is artistic and beautiful, but in a photograph we only see dull shadows and defective gradation. That the light must always fall upon the face at an angle of 45° is one of the laws which the photographer has learnt and inherited from the painter. The latter has, however, his reasons for the almost stereotyped method of lighting he employs, the most important being that the colours are thus displayed to the best advantage; but with us poor black artists this question is of no weight; and, as we have merely paper to represent high lights, and silver for the shadows, it is necessary, in order to secure relief, to obtain as much gradation and half-tone as possible between the two extremes. Whether our pictures may be painted or not, or whether they are suitable for life-size enlargements in oil, are matters which should in no way concern us. Our only efforts are directed towards securing an artistically fine photograph, and it is of no consequence whence the light comes so long as the end is attained. An ordinary meaningless face yields an ordinary picture when illuminated in an ordinary manner; but another altogether different result may be arrived at by skilful and delicate lighting up, and a well pleased client will always be liberal with his money to secure a second dozen of finely modelled portraits possessed of an intellectual bearing. But I must not digress. I merely wished to remark that the beauties of models which are often only to be seen on the shaded side, and which it has been impossible hitherto to depict photographically, may now be secured—if not perfectly, at any rate to a great extent—by the use of a reflector and counter-reflector of my construction. Of my apparatus I send the following description and drawings:—

In fig. 1, O O is a simple wooden frame with a large square opening; E F are two wings moving upon hinges. This reflector is placed between camera and sitter, the lens looking through the square opening above referred to, and shown in figs. 3 and 5.

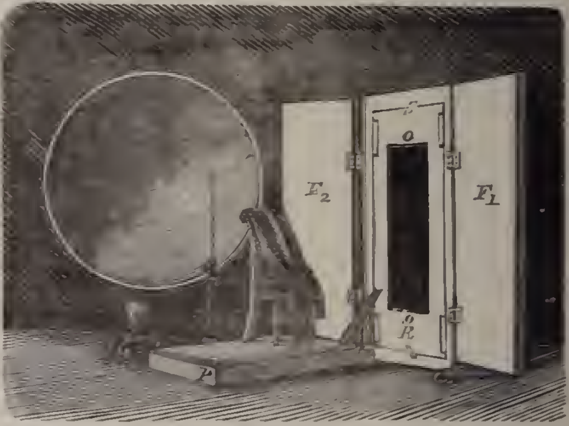

Fig. 1.

The hollow background, the front view of which is also shown in fig. 1, is light and portable, and acts in such a manner as to render the deepest shadows in those parts where the figure is lighted up to the highest degree, and light where the model is in the shade. Two of these reflectors I have constructed, one somewhat more shallow than the other, as shown in fig. 2, A and B.

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* *Photographische Mittheilungen.*

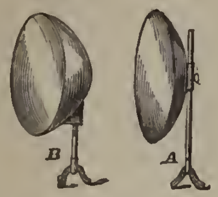

Fig. 2.

A background is placed in the position indicated by 1*a* in fig. 3 (concave), or on the other side as 1*b* (flat), and the sitter (P) first regarded from *x*, or any other point, and then carefully examined from A. The contrast secured between light and shade, between forehead and neck, would be photographically impossible without the aid of a reflector; but place the latter (R) in the locality indicated on the diagram, and then observe the difference. The change is magic; and if the photographer has any soul for appreciation, he will hail with delightt the delicate shadows and half-shadows thus afforded him.

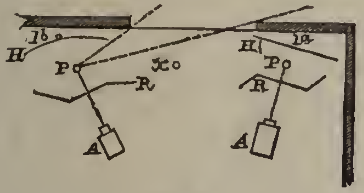

Fig. 3.

In *a* (fig. 4) we see half a cylinder lighted up by simple illumination, the one side white and the other black; in *b* we observe how the shadows may be lightened up by means of a flat reflector—or, in other words, thrown more towards the centre—a fact easily confirmed by experimenting with a roll of paper held up before a window. The cylinder is between two lights, of which one is rather weaker than the other. The effect upon a cylinder is very little, simply making it appear more round; but upon a head, where there are depressions and reliefs (nose, eyes, &c.), faulty shadows must inevitably appear. To remedy these we bring the second wing of the reflector into play, as shown in fig. 5. By means of the reflector and counter-reflector the desired effect may at once be secured, as a single experiment will demonstrate.

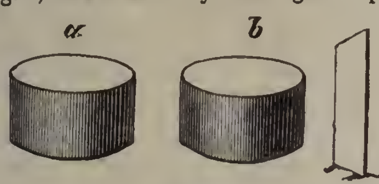

Fig. 4.

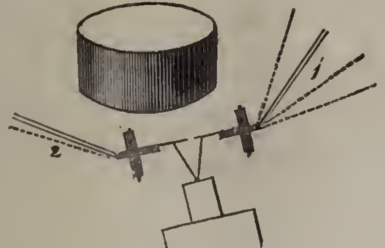

Fig. 5.

The wings (1 and 2) may be placed according to desire, the shadows being represented as darkly or lightly, as required, by moving the camera nearer to or farther from the model. The whole apparatus is a mere frame-work fitted up with stout white paper, and is easily and cheaply produced.

[The great excellence of M. Kurtz's productions are weighty arguments in favour of his system of lighting.—Ed. Photo. News.]

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ON ATMOSPHERIC PERSPECTIVE.

BY A. MEYDENBAUR.*

The subject of atmospheric perspective is one which has till now been more studied by the painter than the photographer, it being, indeed, only recently that photographers have considered it their duty to learn something of the laws involved in the question; and a discussion lately in the Berlin Photographic Society as to the data upon which photographers estimate the amount of exposure has suggested to me the propriety of saying a few words upon the matter.

Under the name of atmospheric perspective we generally understand the modifications of light observed in the different layers of atmosphere between any object illuminated by daylight and the eye. These modifications vary continually according to the position of the sun, the greater or less transparency of the atmosphere, and the locality of cloud patches; and it is for this reason, probably, that, to my knowledge, no theoretical laws have yet been deduced by mathematical means demonstrating the principle of atmospheric perspective.

While the artist possesses in this perspective one of the principal aids to effect, moderating or increasing it at will, the photographer is bound firmly down to results furnished by the mathematical laws which govern the action of his camera, although the latter, it is true, yields, under certain circumstances, pictures which, as regards harmony and effect, leave little to be desired. In this matter, in truth, some photographers are more successful in their results than others, and when, as in these certain instances, practical proof has thus been afforded of the value of perspective, theory, as usual, comes limping behind to confirm our conclusions. Atmospheric perspective obtrudes itself upon the practical photographer in two ways; in the first place, he finds that he must expose for a near object much longer than for a similar one at some distance; and, secondly, the contrasts of light and shade are not so marked in objects afar off as in those close at hand. We may admit the fact that in the daylight all objects around us, under similar conditions, receive an equal amount of light, for although the well-known physical law states that the amount of light is in inverted ratio to the square of the distance from the source of illumination, still we may regard all objects around us upon the earth as equi-distant from the sun. From our own individual point of view, however, the objects are, of course, at various distances, and yet they appear to us, supposing a clear view and no disturbing influences, all equally lighted up. The explanation of this is, that the law of the decrease of light intensity in comparison to the square of the distance is also here of value, and influences, in some degree, the aperture of the camera; an illuminated point sends forth from a double distance only a fourth the amount of light into the camera as would be given by one at a single distance. But the total of the illuminated points of which a surface consists occupies at the double distance but a fourth of the space taken up by a similar surface at a single distance, or, in other words, the illuminated surface appears to us four times smaller. The deduction, therefore, is, that the more distant point appears as intensely lighted as the nearer one, and the effect upon the sensitive plate is in both cases the same. In our eyes the effect is, from a mathematical point of view, different. For if a square line of the retina is impinged upon by a certain quantity of light, and four square lines afterwards with the same amount, we are apt to ascribe the difference in the size of the illuminated surfaces in a certain degree to the power of the light itself. An example will render the matter more clear. Supposing we stand in front of a street lamp and compare the light from the same with the two or three nearest lamps of the same kind, these latter will appear four times, nine times, &c., smaller than the first. A portion of the first flame will appear as large as the second or third light, and yet we know they are all of equal intensity. The moon or the sun, although at times more or less distant from the earth, appears always to have the same amount of light, if a portion of the same only are examined in a telescope with a small aperture, which allows but a small section to be seen at a time.

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* *Licht*

This law, that equally lighted objects under similar conditions, but at various distances, always appear illuminated to the same degree, influences atmospheric perspective, and to the co-operation of the two effects is due the varying shades of illumination observed. The atmosphere is, indeed, a body that interferes with the light rays, breaking, destroying, and modifying them in many ways. These modifications are observed in the different character of the light after passing through certain layers of atmosphere. In clear weather the sky appears blue—that is to say, all rays which do not fall direct from the sun into our eyes or upon surrounding objects are blue; in the same manner as leaves reflect only green light, and flowers coloured light, so does the air throw back but blue light. The higher we ascend, and the thinner, therefore, the atmosphere becomes, the less blue light is there reflected, and the darker does the sky appear, so that upon high mountains the sky appears almost black. What has been said of the light coming from the sun also holds good in respect to light proceeding from other objects, viz., that the layer of air between the observer and the object imparts to the light further effect or power, which uniformly surrounds the outlines of the object like a veil. It is now easy to understand how this veil at a double distance must be double as dense as at a single distance, and that it increases indeed, with the length of distance.

Let us see now how this so-called veil influences the formation of the picture. We will assume that the darkest portions of an object possess a light intensity = 10, while the middle tones are represented by = 100, and the high lights = 1,000. The object is distant a rod from the lens (about the distance required for securing a carte picture), and the light intensity of the atmospheric mass between object and lens is (say) equal to 1, which latter number must be added to the above numbers expressive of the intensity of light upon the object. We may thus express the statement:—

	Shadows.	Middle Tones.	High Lights.
Add the intensity of the	10	100	1,000
atmospheric layer	1	1	1
Total	11	101	1,001

The amount of light stands in the proportion of $\frac{11}{101}$ and $\frac{101}{1001}$, and the proportions are, in this instance, therefore, but slightly altered.

At five rods distance, however, we obtain a different result, which may be thus expressed:—

	Shadows.	Middle Tones.	High Lights.
	15	105	1,005
Proportion	$\frac{15}{105} = \frac{1}{7}$	$\frac{105}{1005} = \frac{7}{67}$.	

In this instance, therefore, the proportion of the shadows to the middle tones has already changed from 1 : 10 into 1 : 7, while the proportion of the middle tones to the lights is changed in less degree, viz., from 1 : 10 to 7 : 67.

At ten rods distance we have:—

	Shadows.	Middle Tones.	High Lights.
	20	110	1,010
Proportion	$\frac{20}{110} = \frac{2}{11}$	$\frac{110}{1010} = \frac{11}{101}$.	

At twenty rods distance:—

	Shadows.	Middle Tones.	High Lights.
	30	120	1,020
Proportion	$\frac{30}{120} = \frac{1}{4}$	$\frac{120}{1020} = \frac{4}{84}$.	

It is superfluous to proceed with the calculation, or to multiply instances, for those given show completely that the contrasts between the deep shadows and the middle tones become smaller, from the fact that the former receive a more increased proportion of light than the latter, and that the high lights always preserve their normal intensity. For this reason distant objects always appear lighter and of a more monotone character.

As the reproduction of colours does not yet come within the scope of the photographer, the changes in the colour of distant objects by means of atmospheric perspective, such as the tint of mountains, woods, &c., possess interest to the painter only; and we may, in truth, consider our theme exhausted by demonstrating the reason and mathematical interpretation of an oft-observed fact.

MILITARY PHOTOGRAPHY.*

An instance of the manner in which modern warfare calls science to its aid is afforded in the important use now made of photography in military affairs. An art-science which is popularly supposed to have no further use than that of pandering to our vanity, by depicting the human form in all its favourable, and sometimes unfavourable, aspects, would scarcely seem adaptable to the serious purposes of war. That such is, however, the case, will be at once seen by a glance at the duties fulfilled by certain branches and departments of the army. In this country there exists, besides the principal Photographic Establishment at Woolwich, a military school of photography at Chatham, a photo-lithographic department at Southampton, and several minor offices where the camera is much used. In France the art is also extensively practised in the War Department, and in Prussia, Austria, and Belgium likewise; while in America, during the recent war, so much was the camera relied upon as a species of field copying and printing apparatus, that a staff of photographers was specially organized to afford assistance to the different corps.

The multiplying of maps and plans rapidly and inexpensively is an application of the greatest value. In the American war, in Abyssinia, and in the present Franco-German campaign, the camera has been extensively used in this connection. Copies of the staff map of France, a document of intrinsic importance, were possessed by the Prussians in but very small numbers at the commencement of hostilities, and all prospect of obtaining further supplies was at once closed by the French authorities prohibiting its sale. To make an accurate copy of this map upon stone or metal would have been the work of months, but its reproduction by photography, or rather photo-lithography, involved but a few hours' labour, and within a week many thousand *fac similes* of the plan are said to have been struck off and placed in the hands of the invading army.

At the time of the Abyssinian campaign there existed no reliable maps of the country whatever; and in this instance, therefore, the aid of the photographers was particularly welcome. In the progress of troops through an enemy's territory it is naturally of great importance to be acquainted with the character of the country. To collect information in Abyssinia an advance guard was organized, comprising among its numbers both surveyors and photographers; the country was carefully reconnoitred in all directions, and the plans and sketches furnished by the surveyors were at once reduced to a certain fixed scale by the camera, and copies thereof printed off as rapidly as possible. So quickly was the work conducted, that sometimes half-a-dozen plans of different proportions were reduced to the prescribed dimensions, fitted together, and multiplied thirty times, within the space of four-and-twenty hours. Pictures of the ravines, passes, and rivers were likewise secured by means of the camera, to show the real character of the natural difficulties through which the troops were to pass, and sketches of localities and points of military or historical interest were in like manner also obtained.

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* *The Echo.*

At the General Photographic Establishment at Woolwich the duties performed are exceedingly various, first in importance, doubtless, being its value as a means of imparting instruction. The importance of the camera in this respect may be shown by reference to a series of pictures illustrative of artillery exercises, and representing, by means of about a hundred sketches, the manner in which drill connected with siege guns, field pieces, mortars, rockets, &c., is conducted. One picture, for instance, illustrates the command, "Prepare to Load!" A gun is seen surrounded by a group of artillerymen, all of whom bear upon the cap a distinguishing number, from 1 to 8, and occupy the various positions proper to the fulfilment of the order. Another picture represents the action "Load!" The men have now moved from their previous positions, and are seen in the act of loading the gun, each gunner strictly performing the duty set down to him. The next pictures will illustrate, in their order, the several commands that follow, and so on throughout the book. The value of a volume of this kind to instructors and recruits is at once evident, for a glance at the pictures suffices to show any man his place at the gun on the issue of the various commands, and to make him comprehend his duties far more readily than if a single explanation of the matter only were afforded.

For purposes of record photography is of considerable assistance. In experimenting with various projectiles against iron targets of different thicknesses, the unerring lens affords ready facilities in registering results. The impression made by a certain shot at a long or a short range, the damage done to the backing of a target by a weighty shell, or the heavy pounding nature of a Palliser projectile, are all photographed, the prints serving as accurate and impartial illustrations to the reports of the officers entrusted with the carrying out of the experiments. It is, indeed, on the evidence of these photographs that judgment is formed of the value of the results, and that the construction of ships and land defences are planned.

Another not less interesting application of the camera is its use to convey information from head-quarters to the military out-stations. Whenever a change occurs in important matters of equipment, such as the mode of wearing accoutrements, the picketing of horses, the adjustment of pack-saddles, setting-up of tents, &c., the new modification is shown in a photograph, bearing upon it the necessary instructions, and copies of these are then distributed to India, America, Australia, and all parts of her Majesty's dominions. It happened that a supply of six thousand pack-saddles were required at the time of the Abyssinian expedition, and as there were none suitable in store, a pattern was specially devised, and the necessary number forthwith ordered. The army was to start from Bombay, whereas the saddles were supplied from England. As the men who were to use them were quite ignorant of their construction and mode in which they were to be fitted, some difficulty would necessarily have arisen when the mules were being hurriedly harnessed on the shores of the Red Sea. To meet this difficulty the authorities at home fitted a mule with the trappings in the approved manner, and caused photographs to be taken from several points of view, and of these copies were despatched to Annesley Bay, which at once conveyed to the soldiers the information of which they stood in need.

For controlling the amount of work done by contractors from time to time, for aiding in military surveys, by registering the position of signal flags and other land-marks, the photographic apparatus may be rendered available. And when we remember that the principal originator of photography, Nicephore Niepce, was himself a military officer, we may think there is other ground for satisfaction that this great invention serves in some way to promote the efficiency of its founder's profession.

British Association for the Advancement of Science.

The fortieth annual meeting of the British Association was opened in Liverpool on Wednesday, September 14th, under the presidency of Professor Huxley, F.R.S. The usual course of lectures, soirees, and sectional proceedings continued for a week, the actual business of the Association closing on Wednesday, the 21st, the following day being devoted to excursions to places of interest in the neighbourhood. The next meeting will be held at Edinburgh, under the presidency of Sir Wm. Thompson, F.R.S.; and the meeting of 1872 at Brighton, Mr. Mayall and Mr. Hallett, heading a deputation from that town, having succeeded in obtaining the decision two years in advance.

No paper in connection with photography was read this year, and the allusion to photography, either in lectures or section papers, was more limited than we remember it on any former occasion; with the exception of occasional reference to its use in astronomical records, and a suggested novelty by Mr. Spiller, photography in the sections was absolutely *nil*. We proceed to give a brief report of such matters as are likely to interest our readers.

A NEW ORGANIC CHLORIDE.

BY J. SPILLER, F.C.S.—Section B.

In the course of an enquiry undertaken for the purpose of discriminating the fibres in mixed fabrics, the author was led to the discovery of the fact that silk alone, of all the materials ordinarily used in the production of textile fabrics, is soluble in concentrated hydrochloric acid. The chemical properties of the silk solution so prepared were described, and a photographic application of the substance pointed out by the author, who exhibited in this connection a matt paper print which was stated to have been produced in a much shorter time than that commonly required for an ordinary print on plain salted paper. Mr. Spiller uses a hydrochloric acid solution of silk, made as concentrated as possible, and neutralized by addition of ammonia, the resulting organic salt being applied, as a ten-grain aqueous solution, to the surface of the paper.

Mr. Spiller recommends the employment of this new compound for salting paper intended to be used in solar camera enlargements, and hints at the possibility of using it also in the collodio-chloride process.

REPORT OF THE KEW COMMITTEE.—PHOTO-HELIOGRAPHY.

Various photo-self-recording meteorological instruments continue in operation, the photography being superintended by Mr. Page.

Photo-heliograph.—The Kew Heliograph, in charge of Mr. Warren De La Rue, continues to be worked in a satisfactory manner. During the past year 351 pictures have been taken on 237 days.

It was considered desirable that six prints should be obtained from each of the negatives of the sun-pictures taken at the Observatory during the whole time that the photo-heliograph should remain at work, which will probably be from February 1862 to February 1872.

In order to accomplish this, an outlay of £120 spread over two years was found to be necessary, and this sum has been voted from the Donation Fund of the Royal Society.

A large number of these prints has already been obtained, and it is proposed to present complete sets to the following institutions:—The Royal Astronomical Society; the Imperial Academy of Paris; the Imperial Academy of St. Petersburg;

the Royal Society of Berlin; the Smithsonian Institution, United States; leaving one set for the Royal Society.

M. Otto Struve, Director of the Imperial Observatory at Pulkowa, visited England in the month of August last. He brought with him, for the Kew Observatory, some sun-pictures made at Wilna with the photo-heliograph, which, it will be recollected, was made some years ago, under the direction of Mr. De La Rue, by Mr. Dallmeyer. This instrument combines several important improvements on the original Kew model, the value of which is forcibly brought out in the superior definition of the Wilna sun-pictures. As, however, the series of the ten-yearly record at Kew was commenced with the instrument as originally constructed, it was not deemed desirable to alter it in any way until the series had been completed and reduced, and the corrections for optical distortion ascertained and applied. In the event of the sun-work being continued after 1872, it will be desirable to do so with a new and improved heliograph.

Mr. O. Struve proposed to exchange the complete series of pictures obtained at Wilna for that made at Kew. He also stated that it is contemplated to erect a second heliograph at the Central Observatory at Pulkowa.

As the photographic records obtained at Kew are of permanent value in relation to astronomical science, and photographs are of doubtful permanency, Mr. Stewart makes the following suggestions in the course of the report:—

Photographic Traces.—The original documents of the Kew Observatory are the photographic traces. As these are supposed to be liable to fade in the course of time, I would suggest that a careful copy of them on tracing-paper would be the simplest and least expensive mode of retaining them. Such a copy would not be sufficiently accurate for investigations regarding peaks and hollows, but these phenomena will, it is hoped, be investigated before the time when the Observatory ceases to be connected with the British Association.

The curves are as yet all in good order. The whole expense of preserving traces would probably not much exceed £100. And I would suggest that I might with propriety direct to this object a grant of £100 which I have at present in hand from the Royal Society for procuring impressions of magnetic curves.

THE PATENT LAW.

Dr. Pankhurst, an able and rising barrister, read a paper on the policy and provisions of the patent law, a subject of considerable interest to photographers. After stating and defining at length the two classes of objections to the policy of a patent law—viz., that protection to inventions is vicious and wrong; secondly, that though some protection may be desirable, it ought not to be in the nature of a legal protection—the reader went on to state the considerations of gain which should induce the creation of a right of property in inventions. They were, that inventions might be more largely and rapidly made; become sooner and more thoroughly perfected; be speedily made and fully disclosed; be more energetically and successfully brought into general use; and, finally, after the legal right in them had been duly determined, that they might become the common property of society. The views of Mr. Macfie and others, who hold that inventors were the creditors of the nation, and deserved national compensation, were next noticed; and he argued that such an arrangement, though it might appropriately form a complement to a patent law, could never be fully regarded as a substitute for a patent law. The practical evils of the present system were, (1) the indiscriminate granting of patents; (2) the want of accuracy in describing the nature and limits of the rights secured by the patent; (3) the cost, vexation, and unsatisfactory character of the trials of patent causes. The remedies which he suggested were:—(1) conditions precedent to the granting of patents; (2) provisions to secure accuracy of description and definition; (3) conditions precedent to litigation; (4) provisions in regard to the trial of patent causes. By such means, it was contended, the total amount of litigation would be lessened, and that simplicity and efficiency would be given to the administration of the patent laws.

Mr. Macfie said his opinion was, that it was not for the public interest to give a right of property of some kind to inventors, on the ground that the trade and commerce of the country and the labouring classes suffered by monopolies.

Mr. Ald. Pochin was of opinion that what was wanted was, greater security for inventors; and he objected to the term monopoly being applied in any sense to the patent law.

Mr. F. J. Bramwell urged that a fourteen years' protection was a premium to the inventor to perfect the invention.

Mr. W. Richardson expressed an opinion that inventors, as a class, would be benefitted by the abolition of the patent law, though there were exceptions.

Mr. James Smith said that Mr. Macfie's argument was inconsistent. The leading free-traders had regarded the patent law as in no sense infringing the free trade principle.

Mr. James Robertson said that his opinion was, that the inventor was only entitled to protection so long as he made a good use of his invention.

Professor Waley said that his opinion was, that considerable improvement might be made in the patent law.

The discussion then closed.

The President, in summing up the arguments of the various speakers, remarked that Mr. Macfie reminded him of a commander of a fortress who held out against the heaviest bombardment, even when all hope was gone.

Correspondence.

ACID SILVER BATH A CAUSE OF FAILURE WITH WASHED PAPER.

Sir,—Some few weeks ago, after one of your articles on the washed paper process, I tried it, but every trial resulted in total failure; it did not matter much whether I fumed one minute or an hour, I could not get anything satisfactory. I only just drew the excited paper through the water once or twice, but no good. I tried several samples of paper, but no better results. I then turned to my sensitizing bath; found it in proper order, sixty grains to the ounce; so I then hunted up all my instruction books, &c., and made up a new bath to their order, viz.:—

Nitrate silver (common crystallised will do)	60 grains
Water	1 ounce

Make sufficient to fill your dish up to ¼-inch, and your bath is made. Now, upon trying this solution with test paper, I of course found it was acid; so was my old one. Well, here was no difference so far, so I floated my paper again; if I washed and fumed, no results; but if I fumed without washing, I then could get the same quality of tones with any and every sample of paper I tried. So, finding that I could not depend on an acid bath for good tones without fuming, I began to wonder how an alkaline bath would do. I took my bath and poured ammonia into it, drop by drop, until the litmus paper showed a decided alkaline reaction. I tried it, and the result was perfection—just the same tones, and a little quicker printing than the paper prepared on an acid bath and fumed.

When I had got thus far, I thought I would have another try at washing the paper; so I did. I sensitized, placed in blotting-paper (which, by-the-bye, I have always done for some time past, and never found any difference, only cleanliness, from hanging), hung up to dry, washed in two different ways. First, drew three times through water, and second, washed in one change of water; blotted again, and dried; then fumed, and, at the same time, fumed a clean sheet of blotting-paper cut up for pads. This paper, with the fumed pads, was then put into the frames, and the prints fairly astonished me; they were printed in half the time, and the colour was splendid. I find, however, that if they are to be toned in the acetate bath, change of water is ample before toning; but if the carbonate bath is used, three or four may be given. With my old acid sensitizing bath, if the silver fell much below fifty, the surface of the paper used to suffer very much. I now can let my bath down as low as twenty-five, and float five minutes without deterioration, although forty grains and two minutes' floating is my standard.

My object in writing is to suggest that others may have failed with the washed paper process from the same cause as myself, viz., an acid silver bath; if not, I have not done any harm with the suggestion.

In conclusion, allow me to state that I have tried Tunicare, and find that with care it is a great boon; but I think that if there were more concise and pointed directions, instead of testimonials, issued with the bottles, less failures and complaints would arise.

With thanks to you for many a wrinkle, I remain, yours truly,
W. W.

28, *Hanover Street, Rye Lane, Peckham, September 20th.*

Proceedings of Societies.

THE BRISTOL PHOTOGRAPHIC SOCIETY.

THIS Society held its first out-door meeting on Thursday, the 15th ultimo. Invitations were issued for sixty-five, the place of meeting being Blaise Castle and grounds, the seat of Mrs. Harford, through which, by whose kind permission, the members were allowed to roam without restriction, and in which is a very lovely and picturesque glen.

Arriving at Henbury (the ladies having left their shawls, umbrellas, &c., at the "Salutation" Inn), the party started for the garden, a second Eden in miniature, for loveliness indeed reigned here, enhanced, perhaps, by the fair daughters of Eve who accompanied us.

The members having grouped themselves, a very fine negative was taken by Mr. R. Tudor Williams, of Monmouth, the coffee process being used, exposure four minutes.

After viewing the conservatories, a few words being given upon the study and grouping of colours as applied to photography by Mr. W. H. Warner, all left for the glen, arriving in which an animated discussion arose as to the exposure necessary for such scenes as were then presented to the eye—moss-bound trees, their wide-spreading branches arching overhead, while by the side of the road ran a brawling brook (now, unfortunately, dry) which, when babbling, must greatly add to the beauty of the glen, besides making music to the ear. From time to time, as pictures presented themselves, Mr. W. H. Barton (who acted as guide to the party) pointed out the main features, and many and varied were the exclamations, all expressive of admiration at the lovliness of the locality. These comprised the "Woodcutter's Hut," the "Giant's Chair," the "Lover's Leap," the "Fishpond" (near which is a magnificent oak tree), the "Bridge" (not celebrated by Longfellow) crossing a lake in which might have been splendid reflections, and near which one of the visitors obtained an exquisite specimen of the humming-bird moth and *libellula quadrimaculata*, whose large eyes were dilated upon by Mr. John Beattie. The party here separated, some going up to the Castle, from the battlements of which were obtained views of the Channel, Welsh mountains, &c.

Before leaving this enchanting spot, an amusing incident occurred, which we cannot forbear mentioning. A group of individuals on the summit of the tower enquired of one of our party if they should drop something on "*'is ead?*" Whereupon Mr. Home replied, "You have already dropped the letter *h.*" The questioner immediately left the battlements in evident disgust. Others roaming over the grounds, discussing light subjects and airy trifles in the most attractive manner to their fair partners.

Repairing to the hostelrie, after the necessary ablutions, mine Host Butson, in due time, announced "Dinner on the table," when all sat down under the presidency of D. D. Home, Esq., Mr. W. H. Warner occupying the vice-chair. The dinner was served *a la Russe* in Butson's best style. The wines were excellent. Due justice having been done to the good things, Mr. John Beattie proposed, in an able speech, "The discoverers and pioneers of the art of photography, coupled with its future culture and prosperity." Mr. Ennel replied. The president then gave a comic recital, which caused shouts of laughter. Mr. W. Harding Warner then proposed "The photographers of Bristol, and the Bristol Photographic Society." Mr. W. H. Barton responded. Many other toasts followed, the last being "The ladies," to which Mr. R. Tudor Williams very ably replied. Harmony and recitations followed, and the company separated at an early hour—

"Happy to meet—sorry to part—
Happy to meet again."

And thus ended one of the pleasantest and most enjoyable days of the season. The weather was lovely.

Talk in the Studio.

HART, THE PRUSSIAN SPY.—M. Hart, who was shot in Paris, a week or two ago, as a Prussian spy, was a photographer, and was engaged last year as an operator in Jersey.

OBITUARY.—We announce, with regret, the death of Mr. W. H. Southwell, of the firm of Southwell Brothers, of Baker Street, a firm which made a distinguished success during the rise of what has been termed the "card mania." Mr. Southwell was a good photographer and an able gentleman.

THE BISHOP AND PHOTOGRAPHY.—The Bishop of Manchester, a few days ago, addressed 2,000 railway employés. In the course of his remarks he said:—"By what he understood to be their wish, there had been added to that a feature which was not in his own mind when he accepted, with a very glad heart, the invitation to visit them. He believed they were to be photographed. This fact gave to the meeting a character which he had not contemplated, for he should be sorry to be photographed in every act he did going about the diocese. Still, as he supposed the photographs were meant to be put into shop windows, he for one, as he understood it to be their wish, would have no objections to the public of Manchester seeing an illustration of the fact that so many employés of a railway company were willing thus to assemble and listen to a bishop of the Church of England; and, further, that a bishop of the Church of England thought it a part of his proper duty and office to go wherever he hoped he had an opportunity of doing ever so little good. If the photographs signalised these facts to those who could not be present with them, he, for one should have no objection to occupy his proper position in the group that would be pourtrayed."

SILVERING OF GLASS.—The proportions given below have proven to be the best for the preparation of silvered mirrors according to the process of J. Von Liebig, in the hands of a writer in the *Journal of the Franklin Institute.* The silvering fluid is obtained by the mixture of a silver solution with a reducing liquid. The silver solution is prepared from nitrate of silver, an ammoniacal salt, and soda lye. One part nitrate of silver is dissolved in 10 parts water. The ammoniacal solution is procured by neutralizing nitric acid, free from chlorine, with sesquicarbonate of ammonia (to 30 parts acid of density 1·29, about 14 parts sesquicarbonate), and diluting this solution to density 1·115; or 242 grammes sulphate of ammonia are dissolved in water and diluted to 1·2 c.c. The soda lye must be free from chlorine, and have a density of 1·05; 140 volumes of the first, 100 volumes of the second, and 750 volumes of the last, give the silver solution. If sulphate of ammonia be used, its solution must be poured into the nitrate of silver solution, and then soda lye added in small portions. The liquid is turbid, and requires about three days to clear. For reducing liquid, a solution of inverted sugar and sodio-acetate of copper is used. The sugar solution is obtained by dissolving 50 grammes white candy sugar in water to a thin syrup, then adding 3·1 grammes acetic acid, keeping at the boiling point for an hour, and diluting to 500 c.c. The copper solution is prepared by adding soda to 2·857 grammes dry acetate of copper, which has been covered by water, until the blue powder has dissolved. The solution is diluted to 500 c.c.: 1 volume of sugar and 1 volume of copper give the reducing liquid. The silvering fluid is made by mixture of 50 volumes silver solution, 10 volumes reducing liquid, and 250 to 300 volumes water. The silver solution is diluted with water, the reducing liquid added, and then the bath is filled. In winter, warm water is used, so that the fluid has a temperature of 20° to 28°. When the glasses are plane, two are placed in contact, and the pair placed vertical in the bath. Curved glasses must come in contact with the fluid only upon their upper surfaces. The silver coating thus obtained should be bluish-transparent and resplendent, and must adhere so firmly as not to be rubbed off by polishing. The cost does not exceed that of the commonest looking-glasses. The amount of silvering-fluid required for a square metre is only 3 to 3·5 grammes.

To Correspondents.

E. & H. T. ANTHONY & Co.—Thanks. We have already referred to the new size, and shall have something more to say on the subject.

Anfanger.—It is not difficult to obtain a fine chocolate tone by several of the known toning baths. The acetate bath is, however, generally preferred for such tones. It consists in the solution of one grain of chloride of gold and half a drachm of acetate of soda in five ounces of water, not using the mixture until it has been prepared forty-eight hours. Mr. Bovey's method, described in our pages some time ago, gives good chocolate tones if required. Mr. Blanchard secures warm tones, as rich and perfect as we have ever seen, by the lime toning bath. His method is described in our Year-Book for 1864. The chief point is to have a good negative, a toning bath not too newly mixed, and to remove the prints in good time from the gold solution. A highly albuminized *Rive* paper answers best.

Norman.—Streaks in the direction of the dip may arise from two or three causes. The most common cause, the repulsion of the bath by the ether in evaporation, does not appear to operate in your case, as you state that the moving of the plate in the bath does not improve matters. Have you tried keeping the plate agitated, chiefly laterally, from the moment of immersion in the bath? If that fail, the streaks are probably the results of some floating scum on the bath. To get rid of it, take strips of clean blotting-paper, just wide enough to cover the surface of the solution, and draw them over it, so as to remove all floating matter. This will probably remove the defect. It rarely arises from the collodion.

R. A.—The prevalent defect in the prints forwarded is what is termed mealiness. It may proceed from two or three causes, but is generally due to one, namely, the use of a toning bath too newly mixed, in which the free chlorine present bleaches and produces the irregular mealy toning your prints show. Other causes will lead to the same result. The use of a printing bath acid with nitric acid sometimes causes it. Some samples of albuminized paper are exceedingly prone to the defect. The use of a neutral bath, fuming the sensitive paper, the use of an old and somewhat slow toning bath, all tend to prevent the defect. Two of your prints in which indistinctness of the shadows is complained of are over-printed, and from somewhat under-exposed negatives.

A. M. J.—Your negative arrived completely smashed. There was no fragment sufficiently large to enable us to form any opinion of the nature or cause of the dirty markings you mention. Send us one or two prints. Perhaps we can form a judgment from the appearances they present.

G. D.—We should recommend either the No. 2 A or the 3 A of the same maker. These will require half the exposure of that you have. For single figures, especially large heads, the No. 2 A will do well, and will work most rapidly; it will, however, require stopping down to cover groups.

E. H.—To acquire a knowledge of which popular engravings are copyright, and which are not, would require considerable investigation, involving much time, which we have not to spare. The engravings in illustrated papers and books published in this country are all copyright, and cannot be legally copied without permission. This, in many cases, would, probably, be not difficult to obtain. Such engravings, if published in America, are not copyright in this country.

H. S.—The description appears to us to be satisfactory. The only point upon which we have a suggestion is the amount of extension. This should be calculated on the amount of enlargement you desire to produce, and the lens with which it will be done. Say you use a quarter-plate lens for enlargement, the equivalent focus of which is six inches; to enlarge a half inch head in a card negative to a three inch head, the distance between the lens and the focussing screen must be forty-two inches, and if the enlargement be required still greater, the distance must be greater. You will find the advertisements of first-rate camera makers in our business columns.

Julius.—We subjoin the formula recommended by Mr. Henry Cooper, to whom the introduction of resinized paper was due. Salt the paper with the following:—

Pure frankincense	10 grains
Mastic	8 ,,
Chloride of calcium	15 ,,
Spirit	1 ounce

Float on a 50-grain silver bath, and print and tone as usual. There are various formulæ for encaustic paste; the following is that of M. Adam-Salomon:—

Pure virgin wax	1 ounce
Gum elemi	10 grains
Benzole	200 ,,
Essential oil of lavender	300 ,,
Oil of spikenard	15 ,,

Clement Rogers.—Thanks. We shall have pleasure in using the paper as you suggest.

W. W.—Thanks. We print your experiences on another page. The price of *Photographic Mosaics* is half a dollar in America, which sum is equivalent to 2s. 1d. sterling. You can obtain it by ordering of Trubner, Paternoster Row. It will probably cost you 2s. 6d. It is not improbable that some photographer might be found who would join you in taking the publications you name; but you will be most likely to find such a person amongst your acquaintance. If you fail in that, possibly an advertisement in our pages might bring a response to such an offer.

W. J. A. G.—We regret that we have not personally had such extended experience with the alcoholic gelatinous solution to be able to explain the various possible causes of failure. Our first experiments failed from the causes we discovered and described; the final experiment, which we detailed as the right method, was successful. The result was, when cool, a perfect opalescent jelly, melting sufficiently for use on very slightly warming. Have you tried pouring off the thin liquid which remains after a portion becomes gelatinous? Possibly the thick portion would answer. Unfortunately, gelatine is a very variable substance, and it becomes difficult to give absolute formula. We believe that the preparations you mention are of the same character as that we described. All such preparations partake of the nature of what is termed "diamond cement," which is, we understand, made in a similar manner. We have found that a good strong gelatine swelled in cold water, then melted, and alcohol added a little at a time, and carefully mixed, gave the desired result. In india-rubber cement it is decomposition, in course of time, of the india-rubber itself which is the cause of the defects. When used as a tolerably thick paste and a good layer used, it remains good a long time.

Eon.—A collodion made with half a drachm of pyroxyline to twelve and a half ounces of solvents, if made with a good sample of the former, would be much too thin. Of a good sample of soluble cotton about a drachm would be necessary to give a reasonably good body to the collodion. If your collodion were thick enough with between two and three grains of cotton to the ounce, the latter must have been of an unsuitable kind, and would give a horny, tough, repellent film, from which the solution would flow off as though it were oily, and this would at once explain your trouble. Age may improve such a collodion, by generally decomposing the collodion, and giving it a more porous character. As a rule, you may conclude that if a collodion is thick enough with less than four grains of cotton to an ounce of solvents, the film will be tough, horny, and repellent.

G. R. Gill.—The article in question, as you will observe, is an extract from another journal, to which we cannot at the moment refer; but we find, on another reference, that the salting solution the author recommends for development printing consists of four drachms of chloride of ammonium and eight drachms of citrate of soda in twenty-five ounces of water; and we presume that this is the same as that referred to, or, at least, one similar.

Capt. Turton.—We are uncertain whether anyone in town keeps matt collodio-chloride paper in stock. We have always prepared our own. It consists of collodio-chloride of silver made by the usual formula, taking care to use a powdery collodion, and applying it to a plain paper, preferably first sized with arrowroot. It is then worked precisely the same as glazed collodio-chloride paper. 2. Try toning your developed opal pictures with dilute sulphide of potassium solution, say three grains to the ounce. With this, either a warm or cold black can be produced. Or try the platinum toning we have recently described. 3. Yes; the opal sheet will do for camera printing. 4. We have found no danger in contact printing with collodio-chloride of silver on opal plates; but, of course, great care is necessary. The results are very beautiful. We believe that collodio-chloride prints are the most permanent silver prints, and have found the working easy. 5. Flap shutters are frequently so used. A camera maker will add one to your camera. 6. We did not hear the lecture, but from the report of it, and what we heard, we conclude it was very good indeed. We have a high opinion of the lecturer. We have seen the pictures you name, and know that they are very fine. 7. The articles by Mr. Croughton, and some by Grasshoff, in our pages, give excellent instructions for retouching negatives. Mr. Mayland contributed a useful article to our Year-Book for 1869. You will find different methods for obtaining a tooth described in those articles. There are, we believe, several matt varnishes in the market, but we have not tried them.

E. L.—You may sensitize various kinds of albuminized paper on the same bath without any fear of injuring the silver solution. Your misdirected letter reached us a few days later than it would have done if directed properly.

J. B. Hutton.—Received. Thanks.

J. H. Lile.—The photographs are very fine. Thanks.

J. Terrors.—We have posted the photographs.

E. Ogier.—Your letter shall receive our attention.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 630.—*September* 30, 1870.

CONTENTS.

	PAGE
Glass for Negatives	457
Photography at Kew Observatory	457
The Proposed New Size	458
Time of Fixing Prints	458
The Government and the Forthcoming Eclipse	458
Foreign Miscellanea	459
The Autotype Company and their Productions. By Wm. Blair	459
Photographic Rambles in South Wales. By Thomas Gulliver	461
Flattering Portraits. By A. De Constant	461
On the Influence of Individuality in Portrait Photography. By Max Petsch	462
Toning Baths	463
Proposed Patent Law	464
Professor Tyndall on Light	465
Children's Pictures	466
Correspondence.—Washed and Fumed Paper—Washed and Fumed Paper: Modified Method	467
Talk in the Studio	467
To Correspondents	468

GLASS FOR NEGATIVES.

Perhaps there is no source of failure more irritating to the photographer than a dirty plate; and there is probably nothing more difficult, under some circumstances, to secure than a perfectly clean plate. One of the chief sources of that trouble has been the use, necessary for large negatives, of patent plate glass. Many of our readers know that the surface of glass, when it possesses what may be termed the natural skin formed by cooling from its molten state, is exceedingly hard and impermeable. Crown glass possesses such a skin, and those who are familiar with its use for small photographs know how much less trouble is involved in securing cleanliness than with patent plate. The latter kind is made from sheet glass, which is ground, smoothed, and polished to secure the evenness and apparent perfection of surface which it possesses. This apparently fine surface is, so far as the photographer is concerned, most delusive. The removal by grinding of the natural surface or skin which the glass possesses robs it of the valuable impermeable hardness it possessed. The inner surface laid bare by the grinding operation is comparatively soft and absorbent. So much so, that if packed with slips of printed paper between the plates, the fatty matter of the printing ink is absorbed, and it becomes almost impossible to remove the traces thereof. A plate upon which a negative has once been developed in like manner absorbs a portion of the silver, and, as many photographers know to their annoyance, the old image of a cleaned plate will often develop with marvellous distinctness when another negative is taken on the same plate. When the trouble does not assume such a definite shape as this, still the absorptive tendency of the glass is a fruitful source of stains, and many photographers prefer the loss incurred in washing plates which have been used once to the loss and irritation involved in using plates of such doubtful cleanliness.

Fortunately for photographers, an efficient substitute for plate glass, possessing its advantages without sharing its defects, exists. Mr. Forrest, of Liverpool, has recently introduced a glass prepared with a special view to photographic purposes, which appears in all respects to comply with the necessary conditions of efficiency. It consists of sheet glass very carefully polished by suitable machinery, which we recently saw in operation. By this treatment, which involves no grinding of the surface, the natural hard unabsorptive skin is retained, but that skin is freed from all accidental irregularities, from all smokiness or dullness, and brought to a high state of perfection and polish, so that chemical cleanliness is most easily obtained. Unlike plate, its surface is not absorptive; unlike crown, it is perfectly flat, even in large plates. It has the flatness of the first, and the fine hard surface of the second; and whilst it is superior to patent plate in surface, it is, from the fact that it involves less labour, supplied at a cheaper rate than the latter.

As an ardent photographer, as well as a glass manufacturer, Mr. Forrest fully enters into the wants of photography. On the occasion of our recent visit to his establishment in Liverpool, we learnt that the use of opal glass, now gradually becoming more frequently used for photographs, was first proposed by Mr. Forrest nearly twenty years ago. On a future occasion we shall have something more to say on the subject of glass and its preparation for photographic purposes.

PHOTOGRAPHY AT KEW OBSERVATORY.

We have more than once had occasion to remark that photography, when enlisted in this country as an adjunct to scientific research under the control of official departments, is too frequently far behind the photography of private enterprise. Our readers are aware that an Observatory is maintained at Kew, at the joint cost of the British Association and the Royal Society, at which much good work is annually effected. For some years past the study of solar physics has been aided by the daily observations made, and the photographic records preserved, by means of the photo-heliograph, the expense of which has been borne by the Government grant fund of the Royal Society. Last year we mentioned, with regret, the report of an able photographer who had visited the establishment, to the effect that the processes he saw in operation were such as had long been abandoned in the commercial practice of professional photographers.

In the Report of the Kew Committee of the British Association just issued, in suggestions referring to the photographic records, we are struck with another illustration of the apparent imperfect acquaintance with recent features of photographic progress. Reporting on the means of securing permanency in the photographic records obtained, Mr. Stewart remarks that "the original documents of the Kew Observatory are the photographic traces. As these are supposed to be liable to fade in the course of time, I would suggest that a careful copy of them would be the simplest and least expensive mode of retaining them. Such a copy would not be sufficiently accurate for investigations regarding peaks and hollows, but these phenomena will, it is hoped, be investigated before the time when the Observatory ceases to be connected with the British Association." As more than one method of photographic printing in absolutely permanent pigments have been in successful operation for years, it is surely a little surprising that the only resource at Kew for meeting the doubtful stability of the ordinary silver prints should consist in the production of hand-tracings of admitted insufficient accuracy for satisfactory investigation. It is not difficult, by carbon printing, to secure photographic copies as perfect in every detail as the original images, and possessing permanency of which no reasonable doubt can be entertained. Here, at least, is one strong argument for giving to photography the recognized position in connection with the British Association to which we referred last week; and if photography gain by the suggested connection, the Association will certainly not lose by being kept *au courant* with the progress of photography.

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THE PROPOSED NEW SIZE.

We have been favoured with two examples of the new size which American photographers propose to introduce for portraiture. Our esteemed *confrère* Mr. Wilson has sent us one, and Messrs. E. and H. T. Anthony have been good enough to send us another; and both our correspondents speak highly of the favour with which the new size has been received by American photographers who have seen specimens. The examples we have received are well calculated to recommend the size and style: they are, in both cases, admirable pictures of charming girls, the subjects, the photography, and the treatment being alike pleasing. The style adopted in these examples is a great favourite in America at present, and it seems to be essentially well suited to the size before us. It consists of the bust printed in an oval medallion, with a moderately dark background, the white margin beyond the oval being sunned down to an even grey. This treatment gives great tenderness to the flesh tones and full value to the whites, and adds much to the general effectiveness of the picture.

As regards the size—which we have already said is five inches by three and a-quarter for the card, and four and a-half by three inches for the print—itself, it undoubtedly possesses some special claims on attention, as Mr. Wilson pointed out in his American letter in our last. It is well-proportioned and elegant, and consequently pleasing. It will involve little trouble or expense to the photographer to introduce, as most photographers possess apparatus which will do the work well. Whilst it possesses more importance than the card, it is easier for postal transmission than a cabinet picture, as it may be placed in most full-sized letter envelopes without difficulty. As a novelty which may give an impulse to business it is, therefore, worth attention, despite some of the disadvantages we mentioned in a former number of the Photographic News.

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TIME OF FIXING PRINTS.

Referring to a recent article in our pages by Mr. Bovey, Mr. H. T. Anthony remarks that it would appear "that in some localities, at least, the fixing of photographs is a mere matter of guesswork. It has been found by Mr. M. Carey Lea, one of our most thorough and painstaking investigators of photographic matters, that a print should be immersed at least twenty minutes in the hypo before it can be considered as fixed. Our practice has led us to the same conclusion; we always leave the prints in the hypo for twenty-five minutes. The only way to judge properly of their condition is to hold up a print before a window and look through it. The appearance of the print is so decided that no mistake can be made. One fruitful source of round yellow spots is the habit of putting prints in the hypo face down. When this is done it is almost impossible to prevent small bubbles of air from forming under the prints. As these press closely against the albumen surface, they prevent the action of the hypo upon the spot where they are located. We used to be very much troubled in this way; but now, since we have divined the cause and fixed our prints face up, we have had no more of that trouble. The top layer, however, should always be fixed face down."

The time required for fixing prints cannot be fixed by any definite rule. It must be governed by the strength of the solution, the temperature, the thickness of the paper, and the number of prints immersed in a given quantity of solution, and hence a habit of examining the prints, as Mr. Anthony suggests, and so acquiring familiarity with the appearance of the perfectly fixed print, is of vital importance. Working with a fresh solution of hyposulphite, containing four ounces in a pint of water, and using the bath at a temperature of 60° Fahrenheit, we have usually left the prints in for from fifteen to twenty minutes with satisfactory results. In such a bath we should not hesitate, with care, to fix forty or fifty whole-plate prints, or even more, if the prints contained but little white. For it should be borne in mind that vignettes, landscapes with white skies, or prints in which white or light tints prevail, require more fixing than dark pictures, simply because they contain more unreduced chloride of silver to be dissolved in fixing. Mr. Spiller's suggestion as to the addition of one ounce of carbonate of ammonia to each pint of fixing solution is well worth adopting, as aiding in securing perfect fixation and the absence of sulphur in the bath.

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THE GOVERNMENT AND THE FORTHCOMING ECLIPSE.

The complete success which attended the American expeditions for the observation of the solar eclipse last year, and the ready liberality of the United States Government, afforded a mortifying contrast with the failure of the similar English expedition the year previous in India. The chief failure on that occasion was in the photographic department, and appeared to be the result of red-tapeism as much as parsimony. We regret, however, to learn that the projected expedition to Spain and Sicily for observing the eclipse of December next is threatened, not with partial failure, but with entire suppression. Until recently—notwithstanding the curt tone in which the Chancellor of the Exchequer had, on more than one occasion, ignored the obligations of the Government in relation to science—it was never supposed that a Liberal Ministry would, in utter disregard of the practice of former Governments, absolutely refuse the use of a single ship, or of a grant of any kind, for carrying out a purpose—initiated by its predecessors, and subsequently carried on by the American and various European Governments—of deep interest to science at large.

We learn, however, from our contemporary *Nature*, that the Admiralty has declined to tell off a single ship, on the ground that the object was entirely foreign to the purpose for which Parliament places funds at the service of the Naval Department. In carrying out the important observations made during the eclipses of 1860, 1868, and 1869, important Government aid has been always forthcoming, the example furnished by our own Government on the first of these occasions having been followed by the French, Prussian, and American Governments on subsequent occasions. It is from the penny wisdom of our present economical Government that the first refusal is received. This refusal is the less excusable as the application is backed by the highest influence which could be brought to bear in such a matter. A joint committee of the Royal Society and of the Royal Astronomical Society had been formed to undertake the organization, and the following programme was decided upon:—

1. At least two expeditions would be necessary: one to Spain, the other to Sicily.
2. At least £1,000 would be required for instruments and observatory-building expenses, &c.
3. The presidents of the Royal and Royal Astronomical Societies and the Astronomer-Royal were to form a deputation to the Government to ask for two ships and £500, the remainder being subscribed by the Societies themselves.

4. The observers were to be carefully organized, and competent persons placed in charge of each branch of the research in each expedition.

In preparing to carry out these decisions, able staffs of observers—distinguished in the several departments of spectroscopy, polarization, photography, and general astronomical research—had been decided upon to secure completeness in the provision and success in the result. The photographic staff included, on this occasion, we are glad to record, several experienced practical photographers, so that no repetition of the *fiasco* of 1868 need have been anticipated. The gentlemen appointed were Mr. Browning, Mr. A. Brothers, Lieut. Abney, Mr. Buckingham, Lieut. Brown, Mr. Chambers, Mr. Clodd, and Mr. Russell Sedgfield. At present the matter is in abeyance. This unexpected and absurd piece of official obstructiveness threatens to deprive science of a valuable opportunity of arriving at important conclusions which will not be available again for some time. Such an expedition cannot readily be undertaken by private enterprise, and there is little time now for organizing other modes of carrying out the expedition, so that unless wiser and more liberal counsels prevail with the heads of the Government, the December eclipse expedition must inevitably collapse.

It is satisfactory to know, however, that the matter is not likely to be entirely neglected, although the mortification is not lessened by the fact that the observations will be made under the auspices of a Government many thousands of miles further from the best point of observation. We understand that it is probable that two American expeditions will be sent to Europe under the Congressional appropriation for that purpose to the officers of the United States' Coast Survey: one under Professor Pierce, and the other under Professor Winlock, of Harvard University. The United States' Navy Department is considering the policy of sending out a naval expedition for the same purpose. The heads of that department in America have a less limited idea of the national duties in relation to science than those in authority in this country.

Foreign Miscellanea.

The last numbers of the *Moniteur de la Photographie* and *Bulletin* have not yet come to hand, on account of the postal communications with Paris being interrupted.

M. K. Schwier, a student in the photographic studio of the Berlin Industrial College, and assistant to Dr. Vogel, has been instructed by the Prussian War Department to proceed at once to the seat of war, for the purpose of taking photographic sketches during the campaign. M. Schwier is a photographer of some pretensions, and several articles on photographic subjects have recently appeared in the *Mittheillungen* from his pen.

Dr. Vogel, the editor of the *Mittheillungen*, has also, it is said, left Berlin, on his hasty return from America, for the seat of war, in the capacity of an army surgeon.

M. Scamoni has published a work on the present state of heliography, in which he estimates the comparative value of the Albert and Woodbury printing processes.

In the *Neue Freie Presse* of last month is a long communication from M. Paul Pretsch, recapitulating his photographic inventions, and asserting the completeness of his processes. He says he is in possession of numerous plates and prints which confirm without doubt the real importance of his discoveries, and he offers to impart the knowledge he possesses under the following conditions: Firstly, for the sum of twenty thousand florins he will communicate to any-one his two processes of copper-plate and press printing, and will make the necessary arrangements for carrying on and superintending the work for a period of one or two years; or, secondly, for the same sum, he will divulge a process for reproducing maps upon a metal plate from pencil or Indian ink drawings. He fears he will be unsuccessful in finding capitalists sufficiently confident in the processes to advance the amounts above mentioned, but assures the public he is in sober earnest, and that his methods are of intrinsic worth.

A photographic varnish is made by Angerer, of Vienna, specially suited for retouching; the film is so hard and tough as to allow working upon with the hardest pencils, as also with the lithographic needle.

M. Schwier recommends the careful dusting of albuminized plates prior to their being coated with collodion, the dusting brush not being allowed to come into contact with the surface, but moved backwards and forwards so as to blow off the dust particles. Small air-bubbles sometimes occur in the albumen film, and these, if destroyed by the brush, give rise to imperfections in the plate. Blowing off the dust with the mouth is not recommended.

So many of the male population are now under arms in Germany, or liable to be called upon for military service, that assistants free from military duties are being advertised for.

M. Braun's printing works, which are within a few miles of Mulhouse, so lately occupied by the Prussians, must be in a perfect state of standstill, for not only are they placed precisely in the road of the enemy, but in all probability the whole of the young *employés* have been called upon to serve their country in the *levée en masse.*

Although Dr. Vogel has been compelled to leave America somewhat prematurely, still there is no doubt he has seen sufficient to form a very good idea of the state of photography in the United States, and it is to be hoped that ere long we may have a complete account of what he saw, together with a personal opinion of his experiences. He seems to have made very good use of his time, travelling from New York to Chicago, thence to St. Louis, Toronto, Montreal, Niagara, and the White Mountains. Everywhere he was received by the principal photographers with much enthusiasm, and became in turn the guest of nearly every artist of note. Among those who had the honour of entertaining him were, Messrs. Carbutt and Rocher at Chicago, Mr. Notman in Montreal, Messrs. Kurtz and Anthony in New York, Mr. Wilson in Philadelphia, and many others.

Dr. Vogel is just now busy in translating his photographic manual into the English language; it will be published at the end of October, by Mr. E. L. Wilson, of Philadelphia.

THE AUTOTYPE COMPANY AND THEIR PRODUCTIONS.

BY WM. BLAIR.

I have lately had the pleasure of perusing some of the more recent publications of this Company, in which they give a short history of the progress of carbon printing, show its great superiority over silver printing, describe the processes wrought and recommended by themselves and their licencees, and the various branches of the illustrative art upon which they have embarked and are presently engaged. These publications must be exceedingly interesting to all who wish to see the photographic art placed on a *permanent* basis, and rescued from the bad name that silver printing has brought upon it. This Company must have men of enterprise in the management, and, I would say, deserves public encouragement, which, no doubt, it will in due time command. Though I have had occasion sometimes to call in question the latitude claimed for some of their patents, I have never entertained any wish but that commercially they should succeed; and I have always thought that they were most likely to do so by adopting the most liberal policy, avoiding, if possible, not only litigation, but even everything in the shape of threatening, and cultivating the most amicable terms with all their brethren of the photographic art, trusting to the advanced standing-ground to which they have attained, and defying competition by the excellence and cheapness of their work. It is gratifying to observe that to a large extent the Company seems hitherto to have been governed by such a policy.

Lately I had the pleasure of a passing call from Mr. Boyes, the active and intelligent agent for the Company in these parts, by whom I was kindly invited to inspect his portfolios. These consisted of an immense variety of splendid reproductions—many from the old masters—of great value; but some were copies of more recent works of art, more captivating still, perhaps, to some classes of the community. The autotypes from the frescoes in the Vatican and Sistine Chapel by Michael Angelo and Raffaelle must be an immense boon to the world of art. Every artist who possesses the means ought to furnish his studio with these noble specimens. The trouble and expense of obtaining the negatives of these paintings must have been great. I am told that lofty scaffolding had to be erected, and the walls and roofs had to be illuminated with daylight carried in from the outside by means of large reflectors. The prints appear as good as if no difficulties had been encountered in taking the negatives. Probably, but for the possibility of printing in permanent pigments, these negatives would never have been attempted. No one, surely, would have undertaken the arduous task merely to produce impressions destined to fade away in a few years. The copies now made may be considered as lasting as the originals, and perhaps more so; and inspiration may now be drawn from the mighty genius of Italian art without leaving the shores of England. The copies from Turner's sketches in sepia appear to be so close imitations as to be readily mistaken for the original drawings or etchings.

The autotype processes are various and valuable, but I shall not enter upon these at present. Those who wish to get a proper acquaintance with them should procure some of the Company's small pamphlets, which give all necessary information. While acknowledging freely the importance of the information thereby conveyed, there are some little matters to which—but in no spirit of hostility—I would be disposed to take exception. For instance, I do not concur in the remarks contained in the concluding chapter of one of the more recent pamphlets, in which it is attempted to show that the double transfer process, as now simplified by Mr. Johnson's method, is even simpler than the common single transfer process. This is a statement that completely puzzles me, and I cannot admit it, except on the supposition that the Company has some unusually intricate way of performing the simple transfer process. And even in regard to the absolute necessity for a double transfer process in the case of valuable negatives taken in the ordinary way, I cannot admit their statement to the full extent. It is true that no person will readily subject valuable negatives to the risks of transfer, but is it not possible to take a reversed negative from such negatives with far less trouble than to doubly transfer every print? The methods of multiplying, and, at the same time, reversing negatives, seem to be ignored by the writings of the Company; and why should this be the case? It is true that where one or two impressions only are required it is better to adopt the double transfer and use the original negative; but if many prints are required, it will be found, I think, more economical and safer to use a reversed negative taken from the original by some of the usual methods.* This is an argument that I had occasion to put forward very long ago in favour of the single transfer where many copies are required. It is surely easier to make one good reversal of a negative than (say) a hundred *re*transfers of the print! And that the prints produced by double transfer will beat those produced by single transfer in quality, is also a statement which I cannot well understand, and am not prepared to admit.

The process of development on glass, if clear and transparent, is one which I should think will require considerable experience to *time* properly. By the single transfer process you develop directly on the white paper, and can judge to a nicety when the development is carried far enough. There is more difficulty in judging of this upon clear glass—at least, I have found it so—and hence I would recommend, where glass is so used, that it should be white or opal.* A white substance placed at the back of the glass from time to time may help as an indicator, but it is not so good as a white surface in close contact with the print.

I observe that the Company gives an ingenious plan for thoroughly coagulating a roll of albuminized paper, by rolling it in flannel, and subjecting it to steam. This is for the purpose of using it in the single transfer process, and upon the theory that the transferred gelatine will then adhere to it by the exclusion of air, as in the case of glass; and they state, in a general way, that previous operators thought it necessary to effect the junction before coagulation. This latter statement is scarcely correct, for it is some years now since I adopted that plan almost exclusively for transfer prints; others have done so since, and it is long ago since the method was published. My advice has always been *not* to *thoroughly* coagulate before transfer, but only so far that the albumen will stand a considerable steeping in cold water without being disturbed. Perfect coagulation is more safely effected afterwards if desired. I have described the reasons of this so often that I hesitate to enter upon these just now; only I may mention that I have lost many prints by having the transfer paper too thoroughly coagulated by boiling water before effecting the transfer. The albumen acquires a surface by complete coagulation that water compounds with difficulty adhere to it. Indeed, I have spread liquid gelatine upon such a surface, and found it to lose its hold in drying, and fall off in glutinous pieces, when it would not have done so from glass. The moderate coagulation effected by ordinary methylated alcohol appears to me to be best for the purposes referred to.

There is only one other matter I shall at present advert to. The Company refers to the practicability, by Mr. Johnson's process, of transferring the sensitized and impressed gelatine surface to varnised paper and other oily supports for development, but states that, in reference to these, and also to ivory, there is this difficulty—that the bichromate has such a strong affinity for these substances that the lights become yellow during development. They propose no remedy for this,† but the remedy is very simple; viz., to wash or steep out the bichromate before effecting the attachment of the two surfaces. The development then can proceed. In fact, this is a method of treating the tissue that does not appear, as far as I am aware, to have been much practised, but it seems to have advantages in a variety of ways. Suppose that I have exposed a number of prints, and find that I cannot get their transfer and development carried through the same day, and there is danger that if kept till the morrow they will become insoluble, and refuse to develop. The plan is to steep them at once in cold water, wash out the bichromate as thoroughly as convenient, and hang up to dry. These prints will keep for a long time, and may be transferred and developed at convenience; yes, even in broad daylight. This hint may, perhaps, be found useful to amateurs who have only snatches of time to spare to carbon printing, and cannot, perhaps, carry through the whole operations at once. In like manner it will be seen that the impressed tissue, when thoroughly washed and freed of the bichromate, and dried, may be attached to any varnished surface, or to ivory, and developed without making a stain.

I cannot conclude this paper without complimenting the Autotype Company on the reduction in the price of their issue. Its quality is excellent, and henceforth there can be o temptation for private parties to make it for themselves, xcept, perhaps, for experimental purposes.

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* Our esteemed contributor seems to overlook the fact that as yet the usual processes for reproducing negatives invariably yield negatives less perfect than the originals. We shall be glad to learn Mr. Blair's experience in this matter.—Ed.

* Opal glass or granulated zinc plates are usually employed.—Ed.

†The addition of a little ammonia to the water in which the tissue is immersed for a short time neutralizes the chromic acid, and materially reduces the tendency to render ivory, white *papier mache*, &c., yellow.—Ed.

Bridgend, Perth, September, 1870.

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PHOTOGRAPHIC RAMBLES IN SOUTH WALES.

No. 7.

BY THOMAS GULLIVER.

Pontypridd

Is situated on the river Taff, at its junction with the Rhondda, in the centre of a beautiful triple valley, and urrounded by most exquisite pictures for the camera, all ying within easy distances, and sufficient to keep the active nergies of a wet or dry plate man in full play for two or hree days at least.

I shall introduce a few of the most interesting subjects o the reader, and, having done these, he will still find more o do. The town derives its name, Pontypridd (in English, Newbridge), from the extraordinary single arch bridge hrown over the Taff. This bridge was erected A.D. 1758, by William Edwards, a self-taught mason. It is a perfect segment of a circle, the chord of which is 140 feet. The height at low water is 36 feet. It is the largest single arch bridge in the British Empire, and the third largest in the world. Two attempts made by the builder proved failures. The first was a bridge of three arches, and the force of the stream, after an extra high flood, washed the structure away. The next attempt—a single arch—failed, as the centre gave way, and burst up. This was avoided in the present erection by making three circular openings in the piers; and the present bridge, now having gone through the wear and tear of one hundred years, appears likely enough to last another hundred. An extraordinary echo is connected with the bridge, which multiplies the sound no less than nine times.

A new three-arch bridge has lately been erected near to the old bridge, and considerably impairs the beauty of the old one.

The Logan, or far-famed Rocking Stone, is to be seen on a common at a great elevation above the town. It weighs about nine tons, but can be easily moved by one person by a gentle pressure on the south side. It is supposed to be an ancient Druidical altar, on which human sacrifices were offered. Around and near the stone is coiled the form of an enormous serpent, formed by large stones, partly buried in the ground. Part of the head and tongue is formed by stones representing the old Welsh character for Truth. One eye is sculptured in form of the old Welsh sun dial; the other eye has a coiled snake, with the tail in its mouth (the emblem of eternity), and reads thus: Truth, Time, Eternity. The eyes are about eighteen inches in diameter; the length of the serpent about 250 yards. Adjoining are to be seen the remains of ancient graves of those who have long since mingled with the dust.

A lovely walk of about half a mile on the bank of the Taff River, right hand side from the bridge, brings us to Berrw Aqueduct, an excellent subject for the camera. Rocks and boulders in the centre of the river; a slender sort of bridge carried across on piers, all together form a charming composition. Still following the said path, we arrive in sight of the Lion Mountain. This, from a proper point of view, gives a good idea of a lion *couchant*, the mane, head, fore paws, hind legs, and tail, all made out by the mountain and small plantation under the brow of the hill. Returning by the hill side, we get an excellent general view of the town and its various bridges. Many other views are to be had; in fact, I do not know any town where so many camera pictures are to be had in so small a circle. I am much indebted to Mr. Thomas Forrest, the active and intelligent local photographer of the town, for his kind assistance and information, but for which I might have missed much that was worth seeing.

FLATTERING PORTRAITS.

BY A. DE CONSTANT.

I do not know whether in America countenances and features are more marked and wrinkled than in the Old World, or whether the vanity of sitters is greater; but it is, at any rate, a fact that recently there have been devised in that country processes and methods the sole objects of which are the rendering of portraits softer and more flattering. The mezzotint of Carl Meinerth, and the so-called Berlin process, furnish, perhaps, the two best examples of this tendency in American photography, and I propose, on the present occasion, to make a few remarks in reference to the carrying out of the manipulations involved, and in regard to the ability of such methods to replace the labour of retouching as now practised.

The mezzotint process is an ingenious application in regard to which I have already made some observations. Thanks to the kindness of its inventor, I have had an opportunity of inspecting some very perfect specimens of its capabilities, and fully appreciating the value thereof. It consists in interposing between the negative and the sensitive paper a transparent medium of some kind, as, for instance, a very thin sheet of transparent glass, which is, indeed, preferable to any other material. The printing frame is then placed in such a manner that the rays of light strike the negative perpendicularly. To judge from the specimens forwarded to me by M. Meinerth, that gentleman appears to be very skilful in the production of portraits of this kind, and understands how to perfect the negatives by suitable exposure and excellent lighting arrangements. But what appears to be still more interesting is the fact that, by constant practice in this description of printing, M. Meinerth's son is now able to print the pictures by direct light without any special arrangement, trusting simply to his own address in placing the printing frames at the right angle, so that the rays penetrate the negative in a straight line. By reason of continual practice in the matter, and with the aid of certain points of direction, this accomplishment might possibly be attained by a careful photographer; but for myself I must admit most humbly that I have been unable to succeed in the matter, and that I was compelled to abandon the deep cardboard guard that I employed for the purpose, and to cast about for a more simple mode of proceeding. This I have had the good fortune to discover, and it affords me much pleasure, therefore, to be able to communicate it, and thus to save others the trouble of discovery. The arrangement consists in pasting to the wood work at the bottom of the frame a piece of white paper, and fitting in the middle of the same a thin upright spike or nail, about one inch in height, in such a manner as to be perfectly perpendicular. The portrait having been covered up from light, the printing frame is placed in the sun, and adjusted at such an inclination that the projecting point casts no shadow whatever upon the surrounding white paper; when proof has thus been obtained that the rays fall perpendicularly upon the frame, the negative is uncovered, and the printing allowed to proceed until the eyes of the portrait are perfectly formed. If the negative is a suitable one, and the paper capable of being vigorously printed, the result will, under these circumstances, be successful. But, in any case, a special description of negative is always necessary; one, for instance, which blends together vigour and transparence without any portion thereof being opaque from excess of development. The direct rays should be able to traverse the negative without hesitation, and the printing be conducted so rapidly that oblique light should be without effect. It must, however, never be lost sight of that the best examples obtained by this mode of printing owe their softness simply to a lack of sharpness, which reminds one too forcibly, perhaps, of a portrait taken a little out of focus.

The so-called Berlin process (although of American origin) is less known than the one just discussed, but is not the less meritorious, a photograph printed by its means being endowed with many useful qualifications. Several experiments that I have made in the matter have, indeed, appeared of sufficient importance to warrant publication. The process in question consists in employing ground glass instead of ordinary glass in taking the negative, the collodion film being formed upon the roughened surface of the glass. It will be seen that the light, in order to operate upon the sensitive paper, must pass through the minute graining of the glass in the same way somewhat as through a sieve. Thus to the image is imparted a harmony and softness which is, in truth, the object of the process. I have already remarked the same effect in employing a varnish of non-actinic tint; a material of this kind applied to the back of the negative permits one to obtain good impressions from hard and faulty plates, which, without special treatment, would be quite incapable of yielding any good result at all. In this case the light is likewise arrested by the non-actinic surface, and is forced to permeate gradually through the screen of varnish instead of being allowed to enter undisturbed, and thus to bring out the shadows long before points in the high lights have had sufficient time to be reproduced. If this explanation is a valid one, we see that a piece of matt transparent paper or sheet of ground glass fitted at the back of an ordinary negative will produce the same effect as that imparted by the Berlin process, the desired result being obtained in a much less costly manner than that of employing the ground glass as a support for the collodion. At the same time, the effect of the ground glass negative is more complete, and presents, morover, the advantage of being capable of yielding two different results, for negatives on the polished surface yields portraits of extreme softness, while with the ground surface prints of a very remarkable vigorous aspect are produced, the graining of the glass imparting to the print all the appearance of an engraving.

There are many ways in which this method may be of use; when characteristic figures or particular reproductions are desired, for instance. I myself have been exceedingly struck by the results obtained on many occasions, which have appeared to me worthy of notice. When the ground surface of the glass is coated with a film of albumen, it is said that by operating thereon, a softening down of the image is the result. I have not actually tried this myself, but the same is, perhaps, explained by the theory that I have formed of the matter. In this case, before arriving at the image upon the albumen film, the light is obliged to traverse the ground surface and become sifted, an operation which does not take place unless the image is produced upon the ground surface itself. This result may at once be understood by regarding a portrait of this kind by transparence in comparison with a portrait produced on the polished surface of the glass.

To the American processes above described may be added the effects produced by the employment of the white camera, the advantages of which I have already discussed, as herein we possess a further means of softening the portrait and rendering it more flattering.

Let us now compare these methods of improving portraits with the effects of the retoucher in the same direction. Dare we put them in the same category, and regard the results obtained as being similar? We think not; for if, at first sight, the effect produced by artificial means, which I have described, is agreeable to the eye to such a degree that one feels inclined to believe the modification to be the result of retouching, we must also frankly acknowledge that the method has not in any way corrected the faults of the photograph as regards lighting or false reflections, so detrimental to the effect of many of our pictures. Such faults are merely lessened—or, rather, rendered less prominent—by the process of softening down, which acts indiscriminately over the whole surface of the image, weakening the good parts of the picture in the same way as the inferior portions. With retouching, however, it is different; this removes only the defect, and leaves such points as are considered to be perfect, effort being made to blend together harmony with vigour. For this reason retouching is the more valuable, especially since the same has been simplified by invoking the use of the pencil; but inasmuch as everyone does not possess the talent necessary for performing the operation, the processes above indicated form a valuable resource to the photographer who finds himself face to face with a public desirous of flattering portraits at any cost. The success which has attended both the mezzotint and Berlin methods in America is a proof that I have by no means exaggerated their utility, and that, at any rate, my intention has been good in making public all details in my possession bearing upon the subject.

ON THE INFLUENCE OF INDIVIDUALITY IN PORTRAIT PHOTOGRAPHY.

BY MAX PETSCH.*

On a recent occasion M. Grasshoff called attention to the characteristic differences which change of position, varied lighting, and modified expressions of countenance are apt to produce upon one and the same person; and, at the same time, he raised the question, why of some persons agreeable portraits, possessing sufficient resemblance to the originals, are never attainable? I have pondered for some time over this every-day recurring question, and now take the liberty of imparting my opinion thereon.

With a normal or perfect human being—that is to say, one well constituted both in body and mind—we photographers have but little trouble. A portrait of such a model, even when not particularly well elaborated, serves as a specimen or pattern for future work; but, unfortunately, it so happens that but very few people are of this perfect nature, for nearly all have their blemishes and their weak points, both of body and mind. It is these individual defects which bring all our cares and troubles, and which account so frequently for our lack of success; and we are not altogether in the wrong when we excuse the faulty character of our work by reason of these shortcomings on the part of the model. At the same time, all must agree that it would be much better on our part to vaunt our powers thus: "Ugly as thou art, my skill shall show how much I can make out of thee!"

Let us, in the first place, consider the more striking individualities of sitters which so frequently tend to mar the perfection of our results. It is easily understood how blondes always come off badly; their great attraction often lies in the colouring, and imperfections and irregularities are thus passed over in nature, while in photography it is just these that remain behind. Deformity and unseemliness of the figure are, unfortunatly, the great difficulties we have most frequently to contend against in our daily work. Bent figures require to be straightened, stout ones to be rendered slim, and thin ones to be invigorated; in short, all imperfections have to be passed over. To attain this, we must have full liberty to control the pose and chiaroscura of the model; and in this way much, indeed, may be done. Bust pictures are, for ill-favoured people, the best style of portraiture, if the head is in any way sufficiently interesting; if such is not the case, another means of rescue must be found. A very stout personage I should depict standing, three-quarter length, and cut the picture rather low, so that the original may appear somewhat longer; and a thin model would be treated in the opposite manner. By judiciously arranging the clothing, buttoning or unbuttoning the coat, similar effects may be produced, as likewise through the medium of the dark or light character of the vestments; black imparts slimness, whereas white makes one appear stouter.

With ornamentation much may also be done. Lace scarfs and appropriate shawls help very greatly to improve the figure, if well arranged, and a good disposition of the background and furniture contribute much to a picture in detracting attention from little faults in the model. In such pictures the head sinks into minor importance as contrasted with the large-face carte-de-visite portraits; for the latter are suitable only for models having very perfect features or interesting expressions, and even then these must be effectively arranged and lighted.

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* *Photographische Mittheilungen.*

The irregularity of features may be got over by skilfully altering the point of view. The most frequent defect to contend against is a crooked nose, which is always most striking in a front view, an aspect which should necessarily be avoided; the best plan is to depict the nose from that side which offers the smaller surface, so that the larger is somewhat foreshortened. As disagreeable almost is a badly formed mouth, which does not run parallel with the line of the eyes; in this case the rule is, even in profile, to take the dipping side of the mouth much foreshortened. For people who squint, there is no other way than to take the head in profile.

The arrangement of the hair is of the highest importance, especially with ladies, for very few adopt a coiffeur which is in accordance with the form of their heads. They follow simply the fashion blindfolded, whether they possess long or short necks, or whether their faces are round or oval. In this case it is the photographer's duty to come forward with advice, and, in case of need, also with his assistance. A broad face appears still broader if the head-dress is arranged at the side, or fully at the back; a long neck becomes longer by piling up the hair and making the head higher, while, on the other hand, its length may be hidden by the adjustment of a few falling curls. A high forehead, which in men is a token of beauty, is the reverse in women, and many will find a way of partially concealing a large forehead with a tasteful display of their hair. In profile portraits, care must be taken that the head does not appear too shallow by reason of the hair being flattened down or being too scanty.

Next in importance to the head are the hands, which are, in truth, the rock on which the beauty of many pictures come to grief. Ugly hands are best rendered innocuous by taking a bust portrait only, or by partial concealment by the arms, clothing, &c., or by taking them considerably foreshortened.

We have now seen the best manner of avoiding or subduing outward defects; but much more difficult is it to get over the sometimes unpleasant disposition of the sitter. One of the most annoying of these maladies is the impossibility of sitting still during the operation of being photographed. One should never allow oneself to be persuaded not to use the head-rest; a very simple position should be chosen when the sitter is a fidgetty one, and the exposure should be short, with plenty of light. A second and very oft-recurring weakness displayed by sitters is that of keeping the limbs in a stiff and awkward position. To these people the caution should always be given that the necessary repose for a portrait is attainable in no other way than by carrying oneself loosely and easily. For awkward models a simple and well-known pose should be chosen, such as one knows by experience is easy to assume; nervousness should be banished by the display of a little friendliness and humour, or, if necessary, a friend may be allowed to remain in the studio. Very disagreeable is that class of people in whose minds, during the sitting, one thing or another is continually occurring, and in pursuance of which they in turn pull down their cuffs, smooth their dress, look at their boots, &c. As a matter of course, every little movement of this kind destroys the pose they have assumed, and the whole process begins over again as soon as the plate appears and the exposure is about to commence.

Against all such conduct, which arises simply from want of self-confidence, a firm manner must be assumed, and the sitter given to understand that not only during the exposure, but likewise during the whole operation of posing, it is necessary to remain quiet. During the pose many assume an expression which is quite foreign to their ordinary appearance, they having possibly studied beforehand an aspect in the mirror which is totally different to their real disposition. The photographer must, in such cases, know how to tone down the expression, and, by suggesting a look "not too smiling, not too serious," to ensure a pleasing result. It is the same with the pose: instead of relying upon the ability of the photographer, sitters will frequently demand to be taken in such and such a position, which answers to some idea of their own. So much liberty should, under no circumstances, be granted to the sitter, as the photographer must not allow his own better judgment to be superseded by that of the model. A friend will also occasionally be introduced to impart advice, and will thus take up valuable time which should be devoted to the operation of posing. Politeness is invariably to be recommended; but in such instances it is not always sufficient to bring about the necessary end, and a serious understanding is sometimes requisite to ensure one's authority. Assistance, even from painters, is, as we all know, of little avail, and should therefore be declined.

We are sometimes asked, why the portraits of actresses are generally so much better than those of sober citizens, for to the greater beauty of these ladies the effect can scarcely be due. The reason is, they bring with them to the studio a collection of toilet paraphernalia (veils, flowers, curls, &c.), by means of which we may arrange and decorate them at pleasure, throwing up any points of beauty and hiding unwelcome blemishes. How different is it, however, with the good and worthy public! As they daily show themselves in their monstrous dress, so they desire themselves to be photographed; and if we now and then propose to introduce a piece of drapery to aid in the effect, or to alter the position of a lock of hair, they will tell you that such a colour does not suit them, or that they never carry their hair in that fashion, with other like protests. Thus, instead of being able to busy ourselves with the artistic and technical branch of our duties, we are often compelled to devote the little time at our disposal to combating the crotchets of our models. For we all know how difficult it is, in the short period at our disposal, to overcome all impediments; and the portrait photographer must not only be skilled as an artist and operator, but likewise have large experience of the world and its ways.

It is only when the photographer shows that he knows at once what to do under the varied circumstances with which he is surrounded, that the public begin to feel that confidence which allows them to put full trust in his efforts, and to bend to his desires without opposition.

TONING BATHS.

MESSRS. ED. LIESEGANG AND COMPANY have recently circulated some information in regard to the preparation of toning baths which may be of interest to our readers. The five baths given are all good and serviceable, and are recommended for different purposes, according to the discretion of the operator. In all of the preparations, it is recommended to dissolve the chloride of gold, in the first instance, in a little water, and then to add the various other materials during agitation of the liquid. In every case the temperature of the solutions should average about 20° Reaumur.

No. 1.—Bath for rosy tones.

Water... ...	1 litre = 1,000 grammes = 2 pounds
Chloride of gold and potas.	1 gramme
Carbonate of soda ...	1 ,,

The salts are dissolved separately, and the mixture effected shortly before employment, as the compound cannot be preserved for any length of time; if the solution does not give an alkaline reaction upon red litmus paper, a further addition of carbonate of soda must be made. The pictures should be vigorously printed, and thoroughly well washed before toning. If the bath acts too enegetically and rapidly, it should be diluted with a further quantity of water.

No. 2.—Bath for bluish-black tones.

Fused acetate of soda	30 grammes
Chloride of gold	1 gramme
Water	1 to 2 litres

This toning bath is endowed with good preservative properties.

No. 3.—Bath for brownish-black tones.

Fused acetate of soda	10 grammes
Borax	1 gramme
Water	1 litre
Chloride of gold	1 gramme

This bath is particularly useful in conserving the whites of prints.

No. 4.—Lime toning bath.

Two solutions must, in this instance, be prepared, which are kept separately, and mixed in equal proportions immediately before use.

(*a*)	Water	1,500 grammes
	Fused acetate of soda	30 ,,
	Phosphate of soda	3 ,,
	Chloride of lime	1 gramme
(*b*)	Water	1,500 grammes
	Chloride of gold and potassium	1 gramme

This bath is particularly recommended on account of its rapid and uniform action, and by reason of the agreeable nature of the tones imparted to the prints.

No. 5.—Toning bath.

Water	2,500 grammes
Crystallized acetate of soda ...	24 ,,
Carbonate of soda	3 ,,
Chloride of gold and potassium	1 ,,

This bath should be allowed to stand a few hours before use.

The prints are withdrawn when they exhibit against the light the desired tint; they then appear on the surface of a reddish-brown. The tint is always the more beautiful the slower the operation of toning is conducted. In a bath which is too fresh, too strong, or too acid, the toning of the prints is unsatisfactory.

If the sensitized paper or the washed prints are dried too rapidly, slight ruptures and defects in the albumen surface are frequently formed; these are best avoided by drying the paper at a moderate temperature, or the finished prints slowly between filter paper, and mounting in a somewhat moistened condition. Indeed, when very thickly albuminized paper is being employed, these precautions should invariably be taken.

Pictures upon arrowroot or algeine paper should be very vigorously printed, and not placed in the toning bath until some albuminized prints have already been manipulated therein; with these precautions all the above toning baths may be used in the same way as for ordinary albuminized pictures.

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PROPOSED PATENT LAW.

As most of our readers, either as inventors or users of inventions, are interested in patent law, we append a draft of a proposed bill sent by Mr. Bridges Adams to the *Journal* of the Society of Arts. After a long preamble stating the grounds upon which patent right is based, in the course of which preamble it is shown that the whole question of property in ideas resolves itself, as in all other property, into money value; that at present no adequate protection exists for property in ideas; and that the chief difficulties and dissatisfaction in connection with patents have arisen from defective laws, therefore a radical change is required. It is then proposed :—

1. That from and after the passing of this Act, which shall be known as the Mental Property Act, a separate court of justice shall be appointed, to be called the Mental Property Court, with appointed judges in sufficient number to prevent delays; and to this court all questions of mental property title shall belong, from the first grant to any subsequent dispute. And that competent assessors shall be appointed to assist the judges in the various branches of mental property that may be brought before them.

2. That from and after the passing of this Act, it shall be lawful for any person of legal age to apply for and obtain a grant of property in any idea, or invention, or contrivance of his or her own producing that may be advantageous to the community, whether the same be a written or printed book, or musical composition, or a work of art, such as painting, sculpture, architecture, or engraving, or a chemical or mechanical production or discovery.

3. That the application shall be for an original production; *i.e.*, it shall not be in actual use, and shall not have been in actual use during the term of thirty years preceding the application for a grant of property, any record, print, memorandum, model, or description notwithstanding.

4. That it shall be competent to the applicant to lodge a provisional or preliminary specification six months before the completion, or a completed specification or sample, at his or her option.

5. That the judges, assisted by those assessors duly appointed, shall determine as to the originality of any application.

6. That, nevertheless, it shall not be competent for an applicant to be refused a grant absolutely, on any consideration whatever. The law officers shall be bound to point out to the applicant, within a short interval, any reason occurring to them why a grant would not hold good, but leaving it optional to the applicant to obtain it on payment of the fees.

7. That in all cases, after the lodging of a provisional or complete specification to which objections have been taken, it shall be competent for the court to put it on public trial, and, if defective, to expunge it in due course.

8. That a printed specification, under numerous and sufficient heads, shall be supplied from the office, leaving as little as possible contingency open to mistakes, or confusion of language, or wilful mystery, on the part of the applicant.

9. That no model shall be required on lodging an application, as involving the risk of discovery by workmen.

10. That no model shall be required on lodging a completed specification, as involving a possibly unfair expense to the inventor.

11. That applicants shall be deemed first inventors in the order of succession by date and number, unless shown to the contrary.

12. That no complete specification shall override a previous provisional, unless in material details not contained in the provisional.

13. That a completed specification shall describe, and illustrate by drawings when needed, the invention claimed as succinctly as possible, in such mode as to be understood by those commonly practising the trade or profession to whichever category the inventor may belong, and that the claim or claims to originality shall be distinctly set forth.

14. That the office shall provide a catalogue and description of the varieties of inventions which may form the subject of separate applications.

15. That in the case of complex machines, involving the use of more than one mechanical appliance, the claims may cover the machine as a whole, and every separate originality may be the subject of another claim, covering its use in other machines.

16. That in case of the deposit of a completed specification, it shall be examined by the proper officer of the court, and notice given of any invalid claim or description, which it shall be at the option of the applicant to withdraw, or if not, the court shall proceed to try the question in public, and expunge the grant and specification altogether or in part if proved invalid.

17. That the fact of an invention having been in use previously shall not invalidate a grant or specification. if the use shall have been private, and confined to one or more establishments as a piece of private trade-knowledge. In such case, the individuals or firms shall have the right to continue their practice, but shall have no right to license or claim royalties from others, which right shall belong to the grantee in virtue of the instruction he has imparted to the public by his specification.

18. Any individual or firm shall have the right to obtain a grant for any origination they may have had in use for any length of time, provided it has not become a public use.

19. The duration of the grant shall be for a period of fourteen years from the date of the grant, and then to be renewed from seven years to seven years, after the expiration of the first fourteen, at the

option of the granter, till it shall number up a total time of twenty-eight years, a duplicate of the original fee payment being made at each seven years' renewal.

20. During the first fourteen years the grantee shall not be compelled to license other persons to use his invention, for the purposes of manufacture or sale, for the reason that the reputation of the invention may be damaged by wilfulness, carelessness, or ignorance. Nor shall he be compelled to licence till he has got his invention fairly before the public. But if his invention be fairly in use at the expiration of the first fourteen years, he shall then be compelled to licence at a rate of royalty not exceeding the average he has charged during the first fourteen years, and if, at the end of the first fourteen years, he has failed to get his invention into use, and demonstrably to the court by no fault of his own, his grant shall then be renewed for another fourteen years, with the right to another fourteen years on the same terms as the first grant.

21. The amount of fees to be levied shall be regulated, not for the purpose of giving a revenue to the State, but to pay the costs of the court, in granting and confirming titles, and the salaries of the officers.

22. The court shall be the only tribunal to deal with the question of title, and in case of an allegation against the validity of a grant the objector shall apply to the court for a public trial, and, failing to make out his case, shall pay to the court such costs as it may levy for the time occupied uselessly by the public officers, and a fine for similar inquiry if such be established.

23. In case of an alleged infringement, the grantee shall apply to the court to obtain an injunction by due examination, and such injunction shall be a confirmation of title not to be questioned in any court where an action for damages may lie. If the grantee fails to make out his case, and is convicted of overstraining his claim, he shall be liable to a payment of costs and a fine.

24. That the law of mental property being a matter in which the public is deeply interested, suits shall be conducted at the cost of the general fee fund, and not of individual suitors, even in such cases as the court considers oppressive; and thus the poor inventor will be on the same footing as the rich capitalist.

25. The site of the court shall be in the metropolis, for the purpose of granting and confirming titles, and settling all disputes as to titles and specifications, the fiat of the court being available in all ordinary courts of law, or before magistrates, for the recovery of damages.

26. That the State shall have full right to use all inventions protected by grant for State purposes, such as vessels of war, naval or military, machinery for harbour uses, State railways, chemical or other inventions, paying a per-centage on economical inventions, bearing a proportion to the savings, or in other cases such a royalty as may be awarded by the court as arbitrators.

27. That inasmuch as there are a large class of inventions in their nature ephemeral, as administering to a temporary condition of public demand, it shall be competent to an inventor to apply for and obtain a grant for a limited period of seven years, capable of renewal for another seven years, at one-half the fees payable for the longer period, and subject to the same general conditions, *i.e.*—

28. That inasmuch as there are some philosophic discoverers who bring to light principles existing in nature not before known, and which principles are convertable to man's uses by processes of chemistry and mechanism, it shall be lawful for these philosophers to obtain a grant of mental property in those principles, and to claim a certain proportion of royalty from practical men, who may bring the principles into every-day use. And it shall be competent for any one to obtain a grant for the application of any principle long known but never applied to use, on the score of originality.

29. That the producers of original books and works of art shall, on depositing a copy or description, obtain a grant of property in them for the whole term of their lives, and to their heirs for the term of fifty years after their death. The fees to be paid thereon the same as in other cases. And they shall be allowed a limit of seven years before making application for the grant.

30. That the present various offices for the registration of books and publications, works of art, patents, and designs, in their various branches, shall be gathered together in one collegiate establishment, wherein libraries and illustrations of every needful kind shall be supplied, the whole being under the jurisdiction of the judges appointed by law. And such an establishment will form the best training school for that alliance of mind with matter which is essential to national progress, in everything pertaining to the creation of national wealth, and the growth of mind.

31. That the officers hitherto employed in the various offices above quoted shall continue their employment at their own option in the combined office.

32. That all former laws on the subject of mental copyright shall become void, and all injuries arising from mental property existing under them shall be dealt with by the new court.

PROFESSOR TYNDALL ON LIGHT.

In Professor Tyndall's lecture on "The Scientific Use of the Imagination," delivered before the British Association, he endeavoured to show that, bounded and conditioned by co-operant reason, imagination became the mightiest instrument of the physical discoverer. In illustrating his position, he gave a brief analysis of the transmission of sound by waves. In the examination of these phenomena, he remarked, we travel chiefly in the track of downright sensible experience; but, having mastered the cause and mechanism of sound, and desiring to know the cause and mechanism of light, to extend our enquiries from the auditory nerve to the optic nerve the faculty of imagination comes into play, so that, whilst pursuing the analogy between the two enquiries, we extend the range of thought necessary for apprehending the subtler conditions pertaining to the latter investigation. We proceed to quote some passages which will prove interesting to our readers as having some bearing upon the agencies necessary in their labours.

We know intimately whereon the velocity of sound depends. When we lessen the density of a medium and preserve its elasticity constant we augment the velocity. When we heighten the elasticity and keep the density constant we also augment the velocity A small density, therefore, and a great elasticity, are the two things necessary to rapid propagation. Now light is known to move with the astounding velocity of 185,000 miles a second. How is such a velocity to be obtained? By boldly diffusing in space a medium of the requisite tenuity and elasticity. Let us make such a medium our starting point, endowing it with one or two other necessary qualities; let us handle it in accordance with strict mechanical laws; give to every step of our deduction the surety of the syllogism; carry it thus forth from the world of imagination to the world of sense, and see whether the final outcrop of the deduction be not the very phenomena of light which ordinary knowledge and skilled experiment reveal. . . .

This universal medium, this light-ether as it is called, is a vehicle, not an origin of wave motion. It receives and transmits, but it does not create. Whence does it derive the motions it conveys? For the most part from luminous bodies. By this motion of a luminous body I do not mean its sensible motion, such as the flicker of a candle, or the shooting out of red prominences from the limb of the sun. I mean an intestine motion of the atoms or molecules of the luminous body. . . .

To preserve thought continuous throughout this discourse, to prevent either lack of knowledge or failure of memory from producing any rent in our picture, I here propose to run rapidly over a bit of ground which is probably familiar to most of you, but which I am anxious to make familiar to you all. The waves generated in the ether by the swinging atoms of luminous bodies are of different lengths and amplitudes. The amplitude is the width of swing of the individual particles of the wave. In waterwaves it is the height of the crest above the trough, while the length of the wave is the distance between two consecutive crests. The aggregate of waves emitted by the sun may be broadly divided into two classes; the one class competent, the other incompetent, to excite vision. But the light-producing waves differ markedly among themselves in size, form, and force. The length of the largest of these waves is about twice that of the smallest, but the amplitude of the largest is probably a hundred times that of the smallest. Now the force or energy of the wave, which, expressed with reference to sensation, means the intensity of the light, is proportional to the square of the amplitude. Hence the amplitude being one-hundredfold, the energy of the largest light-giving waves would be ten-thousandfold that of the smallest. This is not improbable. I use these figures not with a view to numerical accuracy, but to give you definite ideas of the differences that probably exist among the light-giving waves. And if we take the whole range of solar radiation into account—its non-visual as well as its visual waves—I think it probable that the force or energy of the largest wave is a million times that of the smallest.

Turned into their equivalents of sensation, the different light-waves produce different colours. Red, for example, is produced by the largest waves, violet by the smallest, while green is produced by a wave of intermediate length and amplitude. On entering from air into more highly refracting substances, such as glass or water, or the sulphide of carbon, all the waves are retarded, but the smallest ones most. This furnishes a means of separating the different classes of waves from each other; in other words, of analysing the light. Sent through a refracting prism, the waves of the sun are turned aside in different degrees from their direct course, the red least, the violet most. They are virtually pulled asunder, and they paint upon a white screen placed to receive them 'the solar spectrum.' Strictly speaking, the spectrum embraces an infinity of colours, but the limits of language and of our powers of distinction cause it to be divided into seven segments red, orange, yellow, green, blue, indigo, violet. These are the seven primary or prismatic colours. Separately, or mixed in various proportions, the solar waves yield all the colours observed in nature and employed in art. Collectively they give us the impression of whiteness. Pure unsifted solar light is white; and if all the wave-constituents of such light be reduced in the same proportion, the light, though diminished in intensity, will still be white. The whiteness of Alpine snow with the sun shining upon it is barely tolerable to the eye. The same snow under an overcast firmament is still white. Such a firmament enfeebles the light by reflection, and when we lift ourselves above a cloud-field—to an Alpine summit, for instance, or to the top of Snowdon—and see, in the proper direction, the sun shining on the clouds, they appear dazzlingly white. Ordinary clouds, in fact, divide the solar light impinging on them into two parts—a reflected part and a transmitted part, in each of which the proportions of wave-motion which produce the impression of whiteness are sensibly preserved.

It will be understood that the conditions of whiteness would fail if all the waves were diminished *equally*, or by the same absolute quantity. They must be reduced *proportionately*, instead of equally. If by the act of reflection the waves of red light are split into exact halves, then, to preserve the light white, the waves of yellow, orange, green, and blue must also be split into exact halves. In short, the reduction must take place, not by absolutely equal quantities, but by equal fractional parts. In white light the preponderance as regards energy of the larger over the smaller waves must always be immense. Were the case otherwise, the physiological correlative, *blue*, of the smaller waves would have the upper hand in our sensations. . . .

Not only are the waves of ether reflected by clouds, by solids, and by liquids, but when they pass from light air to dense, or from dense air to light, a portion of the wave-motion is always reflected. Now our atmosphere changes continually in density from top to bottom. It will help our conceptions if we regard it as made up of a series of thin concentric layers, or shells of air, each shell being of the same density throughout, and a small and sudden change of density occurring in passing from shell to shell. Light would be reflected at the limiting surfaces of all these shells, and their action would be practically the same as that of the real atmosphere. And now I would ask your imagination to picture this act of reflection. What must become of the reflected light? The atmospheric layers turn their convex surfaces towards the sun; they are so many convex mirrors of feeble power, and you will immediately perceive that the light regularly reflected from these surfaces cannot reach the earth at all, but is dispersed in space.

But though the sun's light is not reflected in this fashion from the aërial layers to the earth, there is indubitable evidence to show that the light of our firmament is reflected light. Proofs of the most cogent description could be here adduced; but we need only consider that we receive light at the same time from all parts of the hemisphere of heaven. The light of the firmament comes to us across the direction of the solar rays, and even against the direction of the solar rays; and this lateral and opposing rush of wave-motion can only be due to the rebound of the waves from the air itself, or from something suspended in the air. It is also evident that, unlike the action of clouds, the solar light is not reflected by the sky in the proportions which produce white. The sky is blue, which indicates a deficiency on the part of the larger waves. In accounting for the colour of the sky, the first question suggested by analogy would undoubtedly be, is not the air blue? The blueness of the air has in fact been given as a solution of the blueness of the sky. But reason, basing itself on observation, asks in reply, How, if the air be blue, can the light of sunrise and sunset, which travels through vast distances of air, be yellow, orange, or even red? The passage of the white solar light through a blue medium could by no possibility redden the light. The hypothesis of a blue air is, therefore, untenable. In fact, the agent, whatever it is, which sends us the light of the sky, exercises in so doing a dichroitic action. The light reflected is blue the light transmitted is orange or red. A marked distinction is thus exhibited between the matter of the sky and that of an ordinary cloud, which latter exercises no such dichroitic action.

By the force of imagination and reason combined we may penetrate this mystery also. The cloud takes no note of size on the part of the waves of ether, but reflects them all alike. It exercises no selective action. Now the cause of this may be that the cloud particles are so large in comparison with the size of the waves of ether as to reflect them all indifferently. A broad cliff reflects an Atlantic roller as easily as a ripple produced by a sea-bird's wing; and in the presence of large reflecting surfaces, the existing differences of magnitude among the waves of ether may disappear. But supposing the reflecting particles, instead of being very large, to be very small, in comparison with the size of the waves. In this case, instead of the whole wave being fronted and in great part thrown back, a small portion only is shivered off. The great mass of the wave passes over such a particle without reflection. Scatter then a handful of such minute foreign particles in our atmosphere, and set imagination to watch their action upon the solar waves. Waves of all sizes impinge upon the particles, and you see at every collision a portion of the impinging wave struck off by reflection. All the waves of the spectrum, from the extreme red to the extreme violet, are thus acted upon. But in what proportions will the waves be scattered? A clear picture will enable us to anticipate the experimental answer. Remembering that the red waves are to the blue much in the relation of billows to ripples, let us consider whether those extremely small particles are competent to scatter all the waves in the same proportion. If they be not—and a little reflection will make it clear to you that they are not—the production of colour must be an incident of the scattering. Largeness is a thing of relation; and the smaller the wave the greater is the relative size of any particle on which the wave impinges, and the greater also the ratio of the reflected portion to the total wave. A pebble placed in the way of the ring-ripples produced by our heavy rain-drops on a tranquil pond will throw back a large fraction of the ripple incident upon it, while the fractional part of a larger wave thrown back by the same pebble might be infinitesimal. Now we have already made it clear to our minds that to preserve the solar light white its constituent proportions must not be altered; but in the act of division performed by these very small particles we see that the proportions *are* altered: an undue fraction of the smaller waves is scattered by the particles, and, as a consequence, in the scattered light, blue will be the predominant colour. The other colours of the spectrum must, to some extent, be associated with the blue. They are not absent, but deficient. We ought, in fact, to have them all, but in diminishing proportions, from the violet to the red.

We have here presented a case to the imagination, and, assuming the undulatory theory to be a reality, we have, I think, fairly reasoned our way to the conclusion, that were particles, small in comparison to the size of the ether waves, sown in our atmosphere, the light scattered by those particles would be exactly such as we observe in our azure skies. When this light is analysed, all the colours of the spectrum are found; but they are found in the proportions indicated by our conclusion.

(To be continued.)

CHILDREN'S PICTURES.

I AM an amateur in photography in a small way, and read the Journal, of course. Many a difficulty have I mastered by its aid. But now help is wanted, not for me alone, but for a suffering profession. Hear the case.

Convenient to me is the thriving town of B., which boasts of three photographers—good fellows, all of them—know a thing or two, and can take a hint or a picture in reasonable time. When in town, I always look in upon them to chat a little on art matters and compare our work.

A few days since I walked into friend A.'s pleasant rooms. A. is a spruce young laddie, very civil and obliging, and always balmy as a May morning to his lady customers. I found him in his dark room, rather nervous. "Fact is, Sam, I have about a dozen babies, more or less, to take this morning;" and an occasional squall from the reception room confirmed his words. A. urged me to stay a little while, and I stayed.

Baby No. 1 came in accompanied by Pa, who carried the baby; Ma, who did the baby talk (and a plenty of it); and two small sisters, who capered and crowed to amuse the darling. Excepting that the baby's head wouldn't keep up any way, and that he would suck his thumb, or cry if that favour was denied him, he wasn't a bad sitter. But these trifling drawbacks consumed an hour or so, and baby was only caught at last when in the act of dropping to sleep, his head held up by hand, and the countenance decidedly puttyish. Ma was dissatisfied, but Pa was in a hurry, and A strained his conscience, affirming that the picture was very good. After some vain attempts to beat down prices, the party left, making room for an interesting pair of twins, whereon I fled despairingly.

Friend B. is a man of few words, and those brief; like Pat's owl, "he kapes up a dale a' thinkin'." I found him trying to take a family group, consisting of a mother, a spoiled three year old boy, and a six months baby. My friend's countenance was an artistic study, and expressed a variety of contending emotions, prominent among which I could read a desire to shake the spoiled boy and free his mind to his mother, while a desire to get a customer was fighting hard with his honest indignation. After waiting for half an hour in vain, I left him in his dark closet preparing his ninth plate, and growling something about the malignant abuse of Herod for the slaughter of the innocents.

Friend C. is a bachelor of the most straitest sect. Babies and baby talk are to him an abomination. He is, in dress, movements, and conversation, a model of sedate propriety. Judge of my surprise when, on entering his room and peering cautiously around the screen, I beheld him shaking a child's rattle with might and main, and trying at the same time to whistle "Pop goes the weasel," with variations. At last, off went the cover, but the whistle and rattle ceased, and the baby threw back its head and bellowed. Mother hush-a-byed, and C., with a look of desperate resignation, prepared another plate, and resumed his musical labours; but baby refused to attend, and, as I fancied, winked precociously out of his right eye, as if he liked to see the fun. "Can't you try something else, Mr. C.?" said the anxious parent; and C., after profound meditation, rushed into the closet, extemporised a drum out of a gutta-percha $\frac{1}{4}$ bath, and, by energetic thumping, succeeded in fixing the infant's attention. Cautiously he uncovered, and, warned by previous experience, he redoubled his musical exertions, accompanying them with a kind of war whoop and scalp dance which would have done credit to any of Barnum's Winnebagoes. The result, I am happy to say, was a very faint picture of a very much astonished urchin with eyes like saucers; but there was a picture, and C. sat down exhausted. I offered some ironical congratulations upon his success, but he was too deeply touched. More in sorrow than in anger he waived the subject, solemnly averring that such labours as these just reported were wearing out his very existence, and conjuring me to write the truth above him as an epitaph—

"Died of children's pictures."

Mr. Editor, what is the remedy? Can't a law be passed that children too small or too ill-managed to be spanked into quiet, shall be excluded from operating rooms? Failing in that, can the Indian fashion of strapping infants to boards, so as to preclude all motions except winking, be made popular? Astonishing babies multiply upon us, and unless a remedy is found, worthy photographers will be cut off by untimely fate. Tell us, O Nestor of photographers, what's to be done about it?—B., in *American Journal*.

Correspondence.

WASHED AND FUMED PAPER.

Sir,—Excuse my again troubling you with my experiences, but I have a few rather curious facts to relate.

On Friday I put four quarter-sheets of washed paper into my fuming box, and inadvertently allowed it to remain twenty minutes, and when I came to print it, the prints were of a peculiar bluish colour (the prints on the paper sensitized and washed at the same time, and only fumed five minutes, printed a fine purple brown). In the toning bath the colour did not change, and, upon being transferred to the hypo, the colour turned to a cold blue, and the print looked as if the silver had all been washed out (see No. 1). On Saturday I put a piece of the same paper into the frame, and it printed quite a different colour—a purple black rather inclining towards blue—and in the toning bath toned quickly and well (No. 2). So that being kept all night had neutralized any bad effects that over-fuming had caused. No. 3 is a print from the same batch of paper, sensitized and washed at the same time, and only fumed five minutes. I have also enclosed a print untoned. The paper was sensitized and washed a fortnight ago, and printed to-day *without fuming*. You can see that it is a good colour, and it printed almost as quickly as if fumed. Now, for this last piece of business I blame the alkaline sensitizing bath.

By the above facts it is obvious that if washed paper is too much fumed, the same effect as over-washing is produced if used at once; but if kept a day or two it will print all right.

If any of your readers would like to try paper sensitized and washed, I shall be happy to forward a sample for trial; but I think that if carefully prepared, no failures need result. I find that, even when fumed, it will keep a week without even turning colour, and, if kept carefully when unfumed, it will keep months; and if anyone wants to get it all fumed at once, it can be fumed from twenty minutes to an hour as it is required to be kept.—I remain, yours truly, W. W.

23, *Hanover Street, Rye Lane, Peckham, September 27th*, 1870.

[The curious and interesting facts stated by our correspondent on a subject in connection with which, as yet, but limited experiment has been made, are borne out by the examples enclosed. The subject is one which will, we think, well repay careful investigation.—Ed.]

WASHED AND FUMED PAPER.—MODIFIED METHOD.

Dear Sir,—Allow me to endorse what was said in a recent issue of the News by "Theta" concerning his plan of preparing paper for the printing-frame. I have prepared mine in the same way for the last five months, the details being rather different.

The following is my way of working:—

I float the paper on a bath of 50 grains to the ounce for three minutes; then draw it over the edge of the dish (which removes any superfluous solution, and does away with draining), and lay on blotting-paper, albuminized side down, placing a piece of blotting-paper on this, with a board and weight to keep all flat; then I sensitize another piece, which I lay, albuminized side up, on the last, and the blotting-paper on this; I pile them one above the other in this way until I have enough for several days. To save time, two dishes with solution may be under way. After all is dry, I place the paper between filtering-paper, and keep together with two boards. I have a large, wide-mouth jar for fuming, with about one pound carbonate of ammonia at the bottom; I place the paper in this a few minutes before use, which I find answers well without fuming the pads. Enclosed is untoned print, which you may give your opinion on. I may remark that, in washing for toning, very little silver is obtained from the water.—Yours obediently,

Photo Chemist.

79d, *Fratton Street, September 22nd*, 1870.

[The print enclosed, although kept a little too long before we had opportunity of toning and fixing it, bears out our correspondent's statements.—Ed.]

Talk in the Studio.

Stains on Opal Glass.—Smoothed opal glass possesses a surface so absorbent that when an image has once been developed upon it the traces generally remain after cleaning. The method we have generally recommended for removing such stains has consisted in applying tincture of iodine, followed by strong hypo or cyanide, then washing with dilute nitric acid, and rinsing. Mr. Forrest informs us that the use of a little fine emery powder, rubbed for about a minute with the finger-end on the stained part, is the most efficient method of cleaning. We have tried it with complete success. Of course, the plate will require rinsing afterwards.

War and Photography.—As may readily be imagined, the war has put an end to the prosecution of all business not of an absolutely necessary character in Paris. For some time past photographic portraiture has been at a standstill, and many distinguished Parisian photographers are now in London. M. Adam-Salomon and his family arrived a few days ago, for an indefinite sojourn, having given up his pretty residence and studios at Passy to provide accommodation for the wounded. We hope shortly to publish some communications from M. Salomon on the subject of lighting. We may mention also that M. Reutlinger, who is of German birth, is in London.

Portraits of Prisoners and Wounded.—We have been favoured by our *confrere*, Dr. Liesegang, with some photographic groups of French prisoners in Germany, chiefly wounded. They are chiefly Turcos and Zouaves, and seem to include various nationalities—French, Algerians, Negroes, &c. Many of them have limbs or head bound up; one poor fellow is held up on his couch by a surgeon, distinguished by the red cross badge on his arm. Some brood gloomily; but the majority wear an expression of relief, if not light-heartedness, at their escape from the active perils and sufferings of the campaign.

PHOTOGRAPHY AND FINE ART IN INDIA.—"The Simla Fine Arts Exhibition," a daily contemporary remarks, "has at last secured a house in which to exhibit the pictures of the year. Innesown has been secured for the present year's display—a house said to be fairly adapted for the purpose, as the rooms, if not very large, are light and lofty; whilst the spacious pleasure-grounds attached to it will afford ample space for the promenade, which the presence of Viceroyalty and a band, in addition, of course, to the thirst for art, will crowd with pleasure-seekers on the opening day. It is believed there will be hardly less than 300 drawings in water-colours, and 100 oil-paintings, sent in for exhibition. Besides this, there is sure to be a fine collection of photographs, giving ample promise of a display worthy of Anglo-India and the occasion."

RISKS TO PAINTERS AND PHOTOGRAPHERS IN FRANCE.—In the present number of *Art* we find a story illustrative of the dangers which beset artists, and, we presume, photographers in equal degree, in France. "The state of the public mind is exhibited by a notice in the *Moniteur des Arts*, of Paris, which warns artists not to attempt to make sketches or studies from nature in any part of the country—the peasants see a spy in every one who makes notes or handles a pencil. The other day a French artist was seized as a Prussian in a village in Normandy, and had he not been known to an innkeeper who rescued him from the blind rage of the peasants, would very probably have lost his life. Similar incidents occur every day in Paris and elsewhere. An unfortunate collegian was sketching near Vincennes, and being hailed by a *Garde Mobile*, and not noticing the challenge, was shot dead on the spot.

NO FLIES.—The present summer has been unusually distinguished by the plague of flies, and the studio of the photographer has not been exempt from the visitation. We learn from an excellent recently established contemporary (which, we are glad to see, gives promise of permanent vitality—the *Food Journal*) that in Belgium the butchers use laurel oil on their doorposts and window frames, to such good effect that the flies will not enter the shops. Is not this hint really worth taking?

To Correspondents.

⁂ NOTICE TO SUBSCRIBERS.—On the first of October the new postal regulation in regard to newspapers comes into operation, by which for a stamp value one halfpenny all newspapers weighing less than six ounces will be conveyed to all parts of the United Kingdom. Subscribers to the PHOTOGRAPHIC NEWS will receive the full advantage of the reduction. The amount of subscription will in future be:—

For Twelve Months	0	15	2
" Six Months	0	7	7
" Three Months...	0	3	10

The amount of subscription must in all cases be forwarded in advance.

R. H.—The silver in the waste solutions obtained in producing negatives, such as the developing and fixing solutions, should be precipitated as a sulphide with liver of sulphur. This can be either sent to the refiner, or reduced to the metallic state in a crucible, as we have before described.

W. W. WALKER.—The phenomenon you describe with much accuracy is a bad case of fog, most probably arising from the use of the gutta-percha bath, which, unless scrupulously pure, is not a safe material for contact with a nitrate of silver solution. Its behaviour is at times singular. We remember at one time using a gutta-percha bath for the negative solution constantly for four years without the slightest ill-effect of any kind, the solution never being out of it except for occasional filtration. At length, having for some reason kept the vessel empty for a few days, when filled again the solution fogged, and every solution we placed therein, no matter how perfect in condition, began to fog in the course of a few hours. The surface had acquired a condition which readily contaminated the solution. We suspect this is the case with yours. Your best plan now will be to neutralize the solution with a little carbonate of soda, sun thoroughly, filter, and then place in a new vessel of glass or earthenware.

T. B.—In our next.

R. M.—You may obtain the *Philadelphia Photographer* of Trubner, Paternoster Row. The price of each copy is half a dollar, equivalent to 2s. 1d. stirling. We do not know the precise sum charged by Trubner. It is an excellent medium for advertisements intended to circulate in America.

J. B. B.—Acetic acid No. 8 is of about equivalent strength to Beaufoy's acetic acid; that is, about one-third of the strength of glacial acetic acid. For 70 minims of acid No. 8 you may substitute 24 minims of glacial acid. 2. The ready flowing of a solution over a surface already covered with another solution depends on two or three causes, such as the similarity in density of the two solutions, and the absence of any mutual repulsion in their physical character. If you use a new bath in which no accumulation of alcohol is present, and a developer to which a good proportion of alcohol has been added, the latter will run greasily, and this would be cured by omitting the alcohol; whereas if the nitrate bath were old and had acquired alcohol and ether from the immersion of many plates, the addition of alcohol to the developer would be necessary to secure even flowing. In the case you mention the density of the weak developing solution is less than that of the nitrate bath. The best remedy would be the addition of a little sugar to the developer. The fact that you gain the greatest density with the strongest developer is due, probably, to the fact that you are using a highly bromized collodion. Where the collodion contains much bromide, a weak developer produces a similar result as under-exposure, and this, with a fully bromized collodion, gives a thin image.

J. P.—We have generally issued binding cases for each Volume of the PHOTOGRAPHIC NEWS. We are now out of stock for past Volumes (except Volumes XI., XII., and XIII.), but shall issue one for the current Volume at the beginning of the year.

W. H. W. (Penryn).—We regret that we do not know the address in question. We should be glad to ascertain it, in order to obtain an account due to our publisher.

A. STANTON.—There is no branch of photography in which so little definite progress has been made as in dry processes. The earliest process—the ordinary collodio-albumen process—is still thought by many the best, and certainly, with the slight modifications made in it, it yields results as perfect as any at the present time. The advantages of the gum-gallic process of Mr. Gordon are simplicity in preparation, and sensitiveness, and keeping qualities in the plates. The relative merits of processes cannot be dogmatized upon, as different persons, all apparently equally careful, succeed with processes in which others fail. If you have succeeded well with Ackland's modification of the collodio-albumen process, you cannot do better than adhere to it, as we know the process to be simple and efficient. Mr. Keene has retired from business for some years, but has a successor in Leamington, who manufactures, we believe, a similar collodion. But all commercial collodions are now bromo-iodized, and we have no doubt that any of them will answer.

NEMO.—Prior publication will invalidate a patent. If, however, out of the combination of two known or published things you can produce a third which is unknown, that may be regarded as a patentable invention. A patentee, in specifying the subject of his patent, has to make oath that it is his own invention.

NO NAME.—A correspondent, who sends neither name nor initial, makes some enquiries in relation to chloride of gold he has made. The white deposit is doubtless carbonate of lime. The first mentioned solution neutralized with chalk would contain nitrate of lime and chloride of calcium, as well as chloride of gold; on mixing it with another solution containing carbonate of soda, carbonate of lime would be precipitated. You have simply to use the supernatant neutral solution. 2 Chloride of silver is not dissolved by nitric acid. You must first reduce it to the metallic state, either by heat in a crucible, or by means of zinc. Then you can convert the metallic silver into nitrate of silver by means of nitric acid. The ashes from burnt exposed sensitive paper contain a mixture of metallic silver and salts of silver. The safest plan is to reduce by heat in a crucible; but if the paper has been well exposed, the bulk of the silver may be obtained by treating the ashes with nitric acid; but if this were evaporated and crystallized it would be scarcely sufficiently pure for photographic use. 3. We have published all the evidence concerning *Tunicare*, for and against it, which has reached us. We agree with you that it is desirable that a photographer should know something of the constitution of materials entering his bath; but, unfortunately, trade interests render such a thing very difficult to secure. For instance, which of the manufacturers of collodion which has acquired any celebrity publishes the formula by which his collodion is made? What is the infallible cure for dirty plates to which you refer?

YEAR-BOOK OF PHOTOGRAPHY.—In consequence of repeated applications for the YEAR-BOOK for 1870 and previous years, it may be as well to repeat the information that all are out of print except 1861, 1864, and 1867, of which a few copies are left. Of those out of print occasional copies are to be met with at double the original price.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE

M. Adam-Salomon's New Mode of Lighting.—Backgrounds as Aids to Light and Shade ... 469
Acceleration by Light—An "Illuminating Stop" ... 470
American Correspondence ... 470
Matt Albuminized Paper ... 472
Photographic Rambles in South Wales. By Thomas Gulliver... 472
The Lime Toning Bath. By Johannes Grasshoff ... 472
Stopping Development. By John M. Blake ... 473
Albuminizing the Plate. By Jex Bardwell ... 473
The Action of Dry Chlorine upon Desiccated Nitrate of Silver. By MM. Odet and Vignon ... 473
Manipulation of Negatives, Wet or Dry. By M. Carey Lea ... 474
Enlargements on Collodion Films. By Prof. J. Towler, M.D. ... 474
Professor Tyndall on Light ... 475
Correspondence.—Moonlight and Photography—Cardiff Fine Art and Industrial Exhibition—Permanent Sensitive Paper—Liverpool Dry Plates—Reproduced Negatives ... 476
Proceedings of Societies.—Liverpool Amateur Photographic Association—Pennsylvania Photographic Association ... 478
Talk in the Studio ... 479
To Correspondents ... 479
Photographs Registered ... 480

ADAM-SALOMON'S NEW MODE OF LIGHTING.—BACKGROUNDS AS AIDS TO LIGHT AND SHADE.

OR many years it has been the primary aim with the ajority of photographers to secure, in relation to backrounds, a result which painters take special care to avoid: spotless background of an even, unbroken, flat tint, ithout gradation of any kind. Yet a very little obserration and reflection might serve to convince the portraitist hat, however neat and pretty the effect of this technical erfection, it is most destructive to the effect of relief and pace, which is one important characteristic of a good icture. In nature, all objects are brought into relief by ffects of light and shade, and the best painters have always iven the greatest consideration to the gradation of the ackgrounds of portraits, as a means of giving relief to the igure, and securing the general pictorial balance. trangely enough, photographers have been exceedingly low to avail themselves of this valuable aid to good porraiture. A flat, even tint is the very worst representative f space which can be conceived. It can suggest nothing ut what it really is: a plain screen evenly lighted; and actual life a person can only by the rarest chance be und placed in such a position. Yet, as we have said, his is the favourite background of more than nine-tenths f photographic portraitists. Apart from scenic backrounds—and these, for the most part, are incongruous nd unnatural, producing confusion instead of harmony—he plain screen has been almost universal. A few English ortraitists have, by means of masking and sunning the rint, or by means of painted gradation on the background creen, at times varied the general monotony; but, until xamples of the work of M. Adam-Salomon—a special haracteristic of which was the light and shade on the ackground—became familiar a few years ago, scarcely ny attention had been given to the value of such effects photographic portraiture. Since then the cone backround of Kurtz, which we have recently described, has een introduced in America; but the subject has still to btain the consideration of photographers generally.

In our recent interviews with M. Salomon he has escribed to us an arrangement of backgrounds with which e has been working the last two years, which plays an nportant part in lighting the figure, as well as forming a radated background in the picture. The background onsists of a large curved screen, arranged so as to move asily round the figure. The model, being placed in a roper position, remains stationary, whilst the screen is evolved round him, and brought into such relation to the rincipal light from the side as shall give the desired ffect. It will readily be seen that with a screen of a suitble size the amount of side-light reaching the figure can be accurately regulated; by advancing or retiring the end of the curve near the window, more or less light will be admitted; whilst the opposite end of the curve can be made with sufficient accuracy to govern the reflected lights on the shadowed side of the figure. At the same time, the amount of light reaching the background itself is, in like manner, under control. The curve of the screen throws the portion near the window into shade, whilst the opposite side is brought fully opposite the light, the gradation of light and shadow on its surface being entirely within the power of the portraitist. The effect of light and shadow thus produced, when judiciously managed, is most effective. That part of the background in contact with the lighted side of the figure is in shadow, whilst that portion in contact with the shadowed side of the figure receives light, and so, in both cases, gives the fullest relief to the figure. In combination with this curved background M. Salomon uses a ridge-shaped canopy of semi-transparent material, opening at the ridge, and hinged at the base to the top of the curved background, and permitting the amount of top light to be regulated by the opening or shutting of one half of the canopy. By this combination, we are informed by M. Salomon, he is enabled to dispense entirely with blinds, and to produce satisfactory varieties of effect with a degree of ease and facility unattainable by any other method he has tried. The precise shape and proportions of this combination of screen and canopy we cannot at present with accuracy state; but M. Salomon has promised to favour us with a detailed description and diagrams, which we hope shortly to place before our readers.

In the letter of our esteemed American correspondent a circular background screen is described, which revolves on a centre, so that gradations of tint painted thereon may be brought into any portion of the picture. A similar background was introduced into this country some years ago, but, although very effective, it never came into general use.

Col. Baratti describes, in the *Italian Photographic Review*, a background arrangement which will yield either a dark, a light, or a gradated background in the picture. We append an extract from his article describing the arrangement and its advantages:—

"All photographic artists have," he observes, "in a greater or less degree experienced the great annoyance of a change of background as circumstances—such as the light, the dress of the sitter, the age, sex, the colour of the face, of the hair, &c.—may require.

"It will not, therefore, be considered inopportune to give the means by which may be obtained all the shades of colour from black to white on a single screen, without substitution, and at the instant of the pose.

"Take a strip of muslin of suitable width, six metres long, and coloured progressively and with continuous gradation in such a matter that at the opposite ends there shall be one metre of white and one metre of black. These two ends are joined together, and thus form an endless band. This is placed on a wooden roller supported by a framework, and put in motion by two wheels; at the bottom another free roller keeps the cloth stretched.

"The motion may be communicated by hand, by means of a crank, or by clockwork.

"If the operator wants a dark ground he brings the black part to the front, and keeps it there; should he wish it rather lighter, he begins at the white and passes gradually to the darker tints.

"Another advantage of this apparatus is to keep the backgrounds of the pictures free from spots or stains, as the cloth being in motion during the pose, it can leave no traces of them.

"Those who have tried this screen have declared it to be much more convenient than all others—even those used in first-class establishments—and the foregoing description must be convincing as to the advantages which it presents. The construction is simple, presents no difficulty, and also costs little."

ACCELERATION BY LIGHT—AN "ILLUMINATING STOP."

The idea that exposures in the camera may be shortened, without injury to the picture, by submitting the sensitive plate to the general action of a weak light, seems gradually to be gaining ground amongst photographers, and may eventually be made available as a valuable resource in portraiture, especially during dull weather and bad light. That the idea is looked on with suspicion rather than favour by operators with collodion is not surprising. The well-known tendency to fog which diffused light so commonly produces, and the disastrous effect of fog on brilliancy, are sufficiently explanatory of the reluctance of the photographer to bring his plates voluntarily within the reach of such light. In the early days of photography, as we have before stated, the Daguerreotypist used frequently to avail himself of the value of diffused light in shortening exposures. It was a common practice with experienced portraitists, when taking children, to expose the sensitive plate for a second to diffused light before placing it in the camera. But the Daguerreotypist stood in no horror of diffused light; fog was unknown to him; and if he had prepared his plate altogether in diffused light until it received its final touch of the vapour of iodine, the plate was quite safe. In the development it was not necessary to watch the plate; it was placed over the mercury, and left for a specific time, depending upon the degree of temperature, a hasty glance being sometimes taken to ascertain whether the development was complete. In these arrangements there was so little danger from diffused light that the photographer never acquired the horror of its injurious results which most modern photographers possess. Hence, no hesitation was felt in resorting to it as an accelerating agency.

If, however, the specific value of such an adjunct to rapidity be really proved, facilities for utilizing it and applying it under exact control will, doubtless, be contrived. The use of cameras with red or yellow glass apertures has been proposed; but this plan scarcely gives the operator sufficient control, and involves a solecism in principle, inasmuch as the longer the exposure the plate receives to the image formed by the lens, the shorter time it would require to be submitted to yellow light; whereas, if the yellow light were admitted through glass in the camera, the plate would get more of it, instead of less, the longer the exposure proper. The plan patented some years ago, of submitting the plate to the weak light reflected from black cloth or velvet, presented too little certainty as to the amount of light so brought to act upon the plate. Our friend Mr. Wilson describes in his American letter, in another page, another plan for utilizing this idea, the invention of Mr. Griswold. It consists in what he calls an illuminating stop. The diaphragm, instead of consisting of an opaque piece of metal with an aperture of the required size, consists of a piece of semi-transparent substance—oiled paper having been tried—with an aperture of the size desired. The idea is, that whilst the direct light from the object forming the image shall only pass through the small aperture, a certain amount of light will pass through the semi-transparent substance in which the stop is pierced, and so shorten the exposure. Of course these marginal rays must be as much out of focus, or more, after passing through a semi-transparent screen before passing through the lens, as if no such semi-transparent screen were there; but we presume that the light passing through the central portion of the lens is so much more brilliant than the appreciable definition of the image is really produced thereby, that the imperfect definition produced by the weak marginal rays is scarcely noticeable. Certain it is, that in an example forwarded to us, produced by a twin pair of lenses, that half marked as having been produced by the lens with an "illuminating stop" is better exposed than the other half with a stop of the same size of the ordinary metallic kind. The definition in that with the illuminating stop is, perhaps, scarcely so crisp as in the other, but there is certainly no offensive want of definition in the first. On the whole, the experiment appears to be in favour of the use of diffused light as an accelerator.

That the notion is worth careful consideration there cannot be a doubt. It is well known in other branches of physics and chemistry that forces which are powerless to initiate action are often capable of continuing and modifying such action when once commenced, and that fact properly recognized, it may probably well repay the experimentalist to carefully work out the possibilities which this subject presents for investigation.

AMERICAN CORRESPONDENCE.

Retouching Solar Negatives—A Hint to those who Make Reversed Negatives—The Illuminating Stop—A Circular Background.

Retouching Solar Negatives.—When sending you the solar enlargements with my last letter, I should have told you that they were all from negatives that had not been retouched. However, since the retouching of negatives for contact printing has been found so advantageous in many cases, the retouching of solar negatives has been tried, and with a great deal of success too. It requires much more delicacy of touch, however, and something more than a mere stippling, for it will be remembered that all the rugosities of the film become very decidedly plain in the enlarged print.

The best way to proceed, then, is to enlarge the negative image while retouching it as much as possible, for in that way the eye can see the negative and its imperfections much the same as the enlarged print will appear, and greater care can be taken. I have been shown some prints from solar negatives retouched in this manner by Mr. C. A. Winson, a correspondent in the West, and the following is his manner of proceeding, given in his own words:—

"I have looked for some time for a way or means of retouching solar negatives, and have tried everything I could think of, but with no success. I asked many of the solar printers at Cleveland, but none knew, or, at least, could give me any satisfaction. Now, if I state what I have found out, I want to see how many men will say 'it is old.' Let them say it—it is new to me, and good. I remove the bi-convex lens from the rear combination of an old quarter-lens, and place it in a movable rack over my retouching frame, so the lens will be about two and a-half inches above the negative. With a fine-pointed pencil I proceed to stop up the holes seen through the assistance of the magnifying glass. I use pencils of different hardness for different parts of the face. I stand up to do this as I can arrange my frame in the window just high enough, so that I can relax every muscle and make very light touches. If retouching is of any advantage to cartes, it certainly is of twofold advantage to a solar negative; and the results of careful retouching must be seen to be appreciated.

"I enclose my first experiment, not having any better print now on hand, but have improved some on this. The face had some pimples, some freckles, or rather stains of complexion, and being rather thin, I was at a loss to know what to do with it at first, and you see how I got out; and this could be bettered by one experienced in retouching. I use the lenses for retouching cartes as well, and it is a great help both to the eyes and the finished picture.

"It is necessary that the lens be large enough, so the operator may see the work with both eyes at once, and then it will be a relief to the eyes rather than an injury. I use an ordinary retouching frame. To the left side I screw a little upright, of proper height to suit the focus of the lens I am using, and on the top of this I have, held by a thumb-screw, a strip of wood with a slot in it, the same as the blade of a carpenter's bevil. At one end of this strip a hole is cut for the lens, as you will see. By this means I can readily bring the lens over any part of the negative, and work with great comfort and ease. This is a cheap way of accomplishing it, and, of course, more elegant devices can be substituted."

A Hint to those who Make Reversed Negatives.—The carbon process seems to be enjoying a revival in England, and as some of the processes require the negative to be reversed, the following may be useful to those who are working in that direction.

Some weeks ago a correspondent, who is a very intelligent photographer, procured a pair of Steinheil lenses for stereoscopic work. After a few trials, he wrote me that "the chemical and visual foci did not coincide," and he "could not get a sharp picture with them." Having tried several of the Steinheil lenses, and having found them absolutely free from any such fault, I was somewhat mystified, and had such a report come from one less skilled, I should have told the party that *he* was "not sharp." However, I recommended my correspondent to try another pair; but before my letter could reach him, he found out where the difficulty was, and at once wrote me about it. The following is an extract from his letter, and shows how easy it is to understand a difficulty when you know what causes it:—

"To save you unnecessary trouble, and to do justice to Mr. Steinheil, whom I have wronged unintentionally, I hasten to inform you that I have been so happy as to find out what the difficulty was with the two Steinheils. In order to be sure about the focus, I took a good, straight plate, and where the collodion would have come I stuck a piece of ground glass. This plate I put into the plate-holder and took a focus on. The rays of light had to pass through one thickness of glass (the ground-glass) before they were intercepted by the ground side of the glass. This, I thought, would not make any difference, but that was the whole matter. I used then an ordinary piece of ground glass, put it in the plate-holder, and took the focus thereon. I found now that I had to shift the back part of the box further in toward the lenses—in fact, right to the mark I had made where I had to have it in order to get a sharp picture. I tried another picture, and everything was all right. To convince me further, I took my half-size box, set the focus on a sign opposite my window, then took the ground glass out, and put another (transparent) piece of glass in front of it. The result was the same. I had to push in now in order to see things sharp, and the more so the thicker the glass that I used. So I learned that a piece of plate glass interposed between the ground glass and lens, even when in close contact, will make a difference in the focus. Dr. Vogel, who was with me, spoke of this, but thought, like I did, that the central rays could not be deflected—those rays, I mean, that fall square upon the glass. And there we made the mistake, for, in fact, there is only one central ray, and this one is overpowered by innumerable lateral rays. A lesson we can learn from this is, that allowance must be made for this, if we want to take negatives reversed; that is, the glass side turned toward the lens, and the film on the back. For in this instance, a person would be likely to move the ground glass just so far back as the thickness of the negative plate amounts to, and then he would miss it. The better plan would be to reverse the ground glass in the frame, and use the negative glass as thick as the ground glass is."

The Illuminating Stop.—You have given your readers the benefit of the remarks of M. Bazin and Mr. Lea recently, on the acceleration of exposure by the admission of red light upon the sensitized film during exposure; and it is a subject which should command more attention than it seems to have done.

Mr. M. M. Griswold, Lancaster, Ohio, whose composition picture, "Blowing Bubbles," appeared in the *Philadelphia Photographer* a few months ago, and who is attempting a series of pictures similar to those made by our friends Lœscher and Petsch in Berlin, early in July, and before he saw the remarks of M. Bazin and Mr. Lea, begun a series of experiments with what he calls an "Illuminating Stop," namely, a diaphragm made of photograph paper rendered translucent by castor oil, and which he substitutes for the ordinary diaphragm. By experiment, he has also found that red is the best colour for the stop—at least, better than white. He finds that he can thus diminish the time of exposure considerably without increasing the size of the stop, and without any detriment to the sharpness of the picture. I enclose you two photographs, from some of his first experimental negatives, of a group of accessories, curtains, &c. The two were taken in exactly the same time, and same sized stop was used—the darkest one with the ordinary, and the other with the "illuminating stop." You will notice that the picture taken with the latter has less contrast than the other, with equal detail, and a greater tendency to softness. You observe there is no inclination to fog whatever. Want of time has prevented Mr. Griswold from pursuing his experiments very far, but he will do so, and I will send you further details. Meanwhile, I hope your experimentalists will take the matter up and join him. The idea seems a very valuable one; and should it so be proven, porcelain, glass, or other translucent material can be used for the diaphragms. Mr. Griswold's method will be much more convenient to apply, and less costly, than that of M. Bazin or Mr. Lea, and will doubtless prove quite as accelerative. Mr. Griswold seems to think it better than either of the other plans mentioned, for the reason that with his method the accelerating light travels with the image, and produces less fog than by introducing it in the manner suggested by Messrs. Bazin and Lea; for by the latter methods the light must be reflected, and, striking the plate from all sides of the camera-box, create a blurring or fog which must interfere with the printing qualities of the negative.

A Circular Background.—You have described to your readers the conical background of our Mr. Kurtz, and have also drawn attention to the endless background of Signor Baratti, described in the first issue of our new Italian contemporary, and both are very excellent contrivances. Here is another idea, however, which combines some of the advantages of both of the others, and comes to me all the way from Georgia, Mr. C. W. Motes, of Athens, being the promulgator. It is to make the background circular in shape, mount it on an ordinary head-rest stand, so it may be raised, lowered, and revolved, and you have it all. The diameter may be from fifty-four inches upwards. Lamp-black, yellow ochre, and Spanish whiting are used in proportions to suit the taste for the colour. The colour should be graded from one side to the other—dark to light—and then either the dark or the light side may be used by simply turning it as wanted; or, if a uniform tint be required, keep the disc revolving during exposure. Any smith can do the iron-work, and the frame-work to stretch the muslin over costs very little to make.

Your "Old Photographer" is fuller of the "milk of human kindness" than I suspected him to be, judging from the gentle way in which he "let us down" in "Rembrandt effects." But he must not forget that we have to clear the land and make it ready in these Western wilds before we can raise the best of crops.—Very truly yours, Edward L. Wilson.

Philadelphia, September 15th, 1870.

MATT ALBUMINIZED PAPER.

In many cases a plain or matt paper is preferred to paper with the glossy surface of albumen, whether for prints which require to be retouched, or for the transfer of carbon prints, in which case, if a glossy material were employed, the brilliancy of the high lights would contrast disadvantageously with the less glazed effect of the shadows.

Referring to this subject, the *Archiv* gives some interesting details, which we reproduce:—

"A dull surface is secured by the employment of ammoniacal white of egg, but the paper to which it is applied must be very strongly sized, as the ammonia is wont to attack in some degree the gelatine, and to leave the albumen much of its gloss on drying. In order, therefore, to render all descriptions of paper suitable for the purpose—as, for instance, rough drawing-paper and the like—M. Jeanrenaud recommends their treatment for a few moments in a solution of—

Alum	7 grammes
Gum	2 ,,
Water	200 ,,

in order to increase the thickness of the gelatine film with which they have been sized. The sheets of paper thus treated are allowed to drain, and are then laid (one after another) between pieces of blotting-paper, and, while yet in a moist condition, floated upon an albumen bath compounded of—

White of egg	10 parts
Ammonia	2 ,,

The paper should remain for a period of fifteen to twenty seconds upon this solution, and is then hung up to dry.

"The albumen bath remains good for a considerable time, and may be used to the last drop—or, if required, added to a further supply of albumen.

"For carbon printing the same description of paper may be used for transfers, its surface being dipped into alcohol of 30° or 40° strength, dried, moistened again in water, and applied to the pigment paper, in contact with which it is well pressed. The development of the print is afterwards proceeded with in a warm water bath.

PHOTOGRAPHIC RAMBLES IN SOUTH WALES.

No. 8.

BY THOMAS OULLIVER.

Gower Coast—Park Mill and Oxwich Bay.

West of Swansea, stretching away for about twenty-four miles into the Bristol Channel, is the peninsular of Gower, and no other part of Wales that I know affords such varied natural scenery. Every part of the coast-line abounds with fine camera views; artists also find plenty of work for their sketch books.

The nearest railway station to Park Mill is Killay, on the Llannelly Line. This is within four miles, and an omnibus from Reynoldston meets the trains. At the entrance of Park Vale is the "Gower" Inn, where teas, dinners, &c., are to be had at reasonable charges. Near to the inn is a pretty little coomb, or small valley, with a little brook, foot-bridge, trees, shrubs, ferns, and wild plants overhanging the stream. Two or three other nice subjects are close at hand, and, by keeping to the left when leaving the "Gower" Inn, the visitor will come to the ruins of an old castle called Pennard Castle, perched on the brow of a hill overlooking the vale. The sea runs in up the hill at high water, and the view to be had from the castle ruins will well repay the tourist for the trouble of getting up the loose sandy and pebbly path that leads to it. From the castle ruins is a road underneath the cliff that leads to Three Cliffs or Three Cleaves Bay; but this road is only available at low water, and strangers would do best by keeping the turnpike road as far as Penmaen Church, as there is a lane that leads to the Three Cliffs Bay, and is much safer, as the tide runs in rapidly. Opposite the Three Cliffs is the Great Tor, a most remarkable rock; and a little below, the Lesser Tor—both worth photographing. In the Three Cliffs is a cave with pools of clear sea-water and overhanging masses of sea weed—a very fine stereoscopic subject.

Many fine views here will no doubt demand attention for a time, then we will journey on for a mile and a-half, which will bring us to Penrice Castle, the summer residence of C. W. Talbot, Esq., the Lord-Leiutenant of the county. Here, above the modern built house, are the ruins of the old castle, the entrance gate guarded by two massive round towers covered with ivy. Part of the walls of the old court-yard and distant country behind make altogether a fine picture. Permission to go over the grounds must be obtained at the lodge. Travelling on for another ten miles, we arrive at

Oxwich Bay.

And here we have a number of very beautiful views. A church surrounded with trees on the slope of the hill, the shores of the rocky bay, the ruins of the old castle on the right of the church, with a broken foreground, gives a gem of a picture. I well remember my first visit to this lovely spot. On a fine, calm, clear day in August, and after a nice little trip by steamer from Swansea, I landed full of hope, and a plate-box full of dry plates, stereoscopic, Bland and Long's process, with gelatine. Some of the plates were broken on the trip, the rest were duly exposed, and, after a real day's enjoyment, our party got on board again, enlivened by the strains of the band—a violin, double bass, and harp. We rounded the Mumbles Island, but the tide being only half-flood, we had to hire a boat, or wait on board for three hours; so, choosing the least evil, we landed at the Mumbles, and walked to Swansea. Next morning the plates were developed, and turned out well up to a certain point: that was, on the application of the hypo the film took leave of the plate, and floated away in pieces. But this was about thirteen years ago: "Tunicare" was not born or thought of.

Mewslade Bay and the Worms Head are the other places well worth visiting, but I have not yet been there, so for the present leave Gower to visit the Swansea Valley.

THE LIME TONING BATH.

BY JOHANNES GRASSHOFF.*

The most oft-recurring question with which I am saluted when visited by any of my black-fingered brethren is touching the operation of toning, the usual form of query being:—"What description of gold bath do you employ to tone your pictures?" ("if I may be so indiscreet as to inquire," being generally the addendum of the polite provincial); and when my constant reply is, "The lime toning bath," the surprise of my visitors waxes very great. Almost every insignificant operator used to employ this bath at one time by reason of its good keeping qualities and economical nature, there being no residues to be worked up, a task of some difficulty with many photographers; but it has now on all sides come to be generally abandoned. Much has been written respecting its qualities, and it has remained the staple bath with several photographers, such, indeed, as are unable to throw away costly gold solution on account of some slight defects in manipulation. As I myself have used the lime toning bath for a considerable period, and have thus been able to appreciate fully its worth, I have resolved to say a few words here respecting it.

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* *Photographische Mittheilungen.*

My method of compounding the bath is by mixing together in the undermentioned proportions :—

Distilled water	1,000	grammes
Acetate of soda, twice fused	10	,,
Chloride of lime	¼	gramme
Chloride of gold	1	,,

These are well mixed and shaken up, and, after some hours—or, better still, next day—a few bad prints, unwashed, are placed in the solution, and allowed to remain therein for ten minutes or a quarter of an hour. A very marked turbidity is the result, and the prints assume successively several peculiar tints, ranging from red to blue. When these have been removed, the bath may be employed in the ordinary manner, care being taken not to tone too blue. The toning progresses very rapidly indeed the first day, one gramme easily toning from eleven to twelve sheets of paper.

When the action of the bath appears to proceed but slowly, a further quantity of gold may be added; this is done by employing a solution containing one part of chloride of gold dissolved in fifty parts of water, and adding of this fifteen or sixteen drops for every sheet of paper to be manipulated. In this way the only bath that I use is strengthened from time to time; no lime has been added for a period of six weeks, and yet no bad effects from such a course is observable, the greater part of my tones being of a brownish purple tint. If blacker tones are desired, a very small addition of chloride of lime should be made every four or six days ($\frac{1}{10}$th, or $\frac{1}{20}$th of a gramme even, is too much), the turbid bath being filtered regularly about twice a week.

STOPPING DEVELOPMENT.

BY JOHN M. BLAKE.*

If we attempt to stop development on a fully exposed plate before it has reached its full intensity, streaks and stains will be sure to form if we do not pour on an abundance of water, and keep the plate wholly covered until the oily appearance of the film has nearly disappeared, and there is no longer any difficulty in keeping the film covered with a small quantity of water.

In photographing landscapes, it is often of the first importance to carry as little weight of material as possible, and the necessary supply of water adds greatly to the load. The appearance of the plate spoken of is caused by the difficulty with which pure water mixes with a solution containing alcohol. The remedy is simple. If an equal amount of alcohol is added to the wash-water to that contained in the developer—one-quarter drachm per ounce or more—then, with practice and care, one ounce can be made to go as far as a pint of ordinary water for the purpose indicated. The "crawling" of the developer or of the wash-water will be increased by adding too much alcohol. Where the use of gelatine in acetic acid is indicated, as in copying drawings, the developer flows over the plate without a break, though no alcohol is added. In this case alcohol is not required in the wash-water.

I had devised this expedient for landscape photography before the publication of Robinson's method with golden syrup. There are some difficulties with the latter that make it well to combine the two methods. First, if the plate has had a full exposure, it is impossible to cover its whole surface at once with the preservative, and thus stop development on all parts alike, and stains result unless we dash it over the plate, and thus use more bulk of it than we would have to of the water and alcohol mixture, on account of the viscid nature of the syrup, even if it contains its proper proportion of alcohol. There is a second difficulty: many samples of commercial molasses—perhaps all—contain chlorides. In two samples this was so much the case that a curdy precipitate of chloride of silver was formed when it was poured on the film, and this remained in part firmly adherent, and became discoloured by diffused light, and left numerous dark spots after fixing. The best plan, under the circumstances, seemed to be to first wash off the developer with the alcohol and water, then to flow on the syrup mixture, when no curds formed, since the silver had been washed off. Then "golden syrup" was useful to keep the plate moist until an abundance of water could be obtained for fixing, and but a small quantity of the syrup was required.

ALBUMINIZING THE PLATE.

BY JEX BARDWELL.

In looking over my Photographic News I find that De Constant says, "It may be argued that the method of pouring the albumen solution upon wet plates, in the same manner as collodion is applied, is an easier and a more simple manner of working; but it has ever failed me to albuminize a plate in this way, for as soon as the plate was taken from the water, and placed in a horizontal position, the water fled on all sides, leaving dry spaces all over the plate."

I have often had the same trouble, but I found it was caused by a greasy surface, if it may be so called, and found the remedy in washing the plates, after they had been cleaned, in a solution of carbonate or bicarbonate of soda in water, and then to well flow the plates with clean water; and by immediately flowing the plate with the albumen solution, causing it to push the water before it, and flowing the second time, allowing the first to run down the sink, and then setting the plate up to dry in a warm room, they dry so quick, that by the time I have a dozen prepared, the first plate is in a condition to flow with collodion. I prefer to make my coffee plates in a room quite warm, and the plates are dried quite near the stove, so they dry very quick, and by so doing I have no dust on them. I hear a great deal about plates blurring, but I use a heavy collodion, giving a creamy film, and am never troubled with that fault—that is, with a coffee plate. I find they develop better, give softer negatives, and, I think, require less exposure, provided you soak the plate for a little time before you commence to develop. Just wetting the plate and developing will tend to hardness. Soaking and washing will very naturally modify the result. —*Philadelphia Photographer.*

THE ACTION OF DRY CHLORINE UPON DESICCATED NITRATE OF SILVER.

BY MM. ODET AND VIGNON.*

In the preparation of nitric acid by M. Deville's method, chloride of azotyle is formed, which is at once attacked by the nitrate of silver in excess.

The nitrate of silver tube, containing 80 grammes of this salt, is maintained at a temperature of about 95° Cent., and a current of dry chlorine is then passed through in such a manner that one litre of the gas suffices to feed the tube for two hours.

At the end of about five hours two cubic centimetres of a liquid is obtained which, when freed from chlorine by treatment with carbonic acid, is of a light brown colour. The contact of the hand suffices to boil the liquid. Treated with water it becomes dissolved, without the generation of fumes. The acid solution gives, with nitrate of silver, a precipitate of chloride of silver, the liquid containing a large proportion of nitric acid. The reactions are those of chloride of azotyle.

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* *Moniteur de la Photographie.*

MANIPULATION OF NEGATIVES, WET OR DRY.

BY M. CAREY LEA.

The following idea seems worth trying, though I have not at this time been able to experiment with it.

If a negative is found to have too great contrasts, so that if printed sufficiently to get detail into the high lights the shadows are over-printed, it might be subjected to the following treatment:—Coat the back of the plate with a sensitive mixture—collodio-chloride, gum and bichromate, gelatine and bichromate, or any other—and expose briefly to direct sunlight, the face to the light. The negative will print itself on its own back, and thus we will have a positive (which should be faint) superposed on a negative.

A little consideration will show that, if this negative be now printed in the usual way, the impression on the back will be thickest on the shadows, and thinnest on the high lights. It will thus hold back light from the thin parts, whilst scarcely doing so from the high lights. Indeed, if the operation of making the image on the back of the negative be cut pretty short, the high lights need not receive any impression at all.

I think there is little doubt that a good deal might be effected in this way, both in landscapes and portraits. Suppose the face in a portrait is specked, and gives the effect of a bad complexion, a treatment like the foregoing would or might take the place of a retouching.

A negative so treated might be printed either in sunshine or shadow; the effect of the latter would probably be to give great softness.

It seems to me likely that the most advantageous method would be to make the back coating of gum and bichromate, because any portions not wanted of the back image can be instantly wiped out with a rag and hot water, or, better, with a fine sable pencil dipped in hot water.

Of course, the sensitive mixture would need to be applied to the back in the dark room. During the printing of the negative upon the coat on the back, this coat would need to be carefully protected from light. With the mixture of gum and bichromate, it is only necessary, after the printing, to throw the plate into cold water, which develops and fixes. Mixtures of gum and bichromate, or gelatine and bichromate, need to be printed as soon as possible after drying, and to be protected more carefully from light than ordinary positive paper, as they are more sensitive. They also print more rapidly.

ENLARGEMENTS ON COLLODION FILMS.

BY PROF. J. TOWLER, M.D.*

Transferring of Collodion Films to Paper.—This is a branch of photography that deserves to be better known, and, consequently, a more extended practice. It is my opinion, founded on experiment and practice, that most of our retouching ought to be made on collodion positives, because it can be executed so much more easily on them by those who are not familiar with negative operations. For instance, how comparatively easy is the task to produce the proper lights and shades when not reversed, but existing as they do in nature; whilst, on the contrary, how difficult it is for the uninitiated to reverse the lights and shades! The engraver and the wood-cutter require to be apprenticed for years to the art before they can claim to be masters in it. Thus, then, I argue, that it is a more natural and easy practice to take a positive of each negative that requires retouching, and then to retouch this positive. A more extended practice would be, first to retouch the negative, and afterwards the positive.

The reason of this suggestion is self-evident; for all that can be done in the way of retouching consists in rendering certain parts more dense, and thus heightening the high lights: it is impossible at present to render any of the parts separately less dense than their neighbours. The action, therefore, of retouching is altogether one-sided. But that which we cannot effect by the retouching of the negative—such as more sharpness and brilliancy to the lines about the eyes, more shadows along the side of the nose, above the chin, or in the cavities of the cheeks—all this can be easily worked in on a positive copied from a retouched negative; in fine, an artistic and almost perfect picture can thus be obtained from a negative copied from a retouched positive which, in its turn, had been copied from a retouched negative.

All this sounds like circumlocution, and may appear to some as superfluous labour, or labour that could possibly terminate in nothing good.

I can assure my readers, however, that the plan is feasible and practicable, and that the results are all that the most fastidious artist can desire. The retouching, naturally, must be the work of an artist. As regards the photographic manipulations arising out of this plan, I have especially much to say; for, although copying is in the general sense an easy operation, it is seldom a successful one; because the necessary precautions are seldom taken to insure success. This assertion is particularly true when enlarged copies have to be taken, either from negatives or positives. I have two or three letters on hand from correspondents asking assistance in their difficulties in this department. One says he has a stock of half-plates, containing negatives of landscapes got up with reference to be copied either in the solar camera, or into larger negatives for contact printing, but that they all fail more or less to produce good results, for when magnified from eight to ten times, the lines which in the negative appear sharp and crisp are in many instances double, and the whole picture has a hazy look. He furthermore states, that the solar camera is all right, plate-holder and focussing glass in rigid coincidence, and the negatives sharp, soft, and transparent. "What am I to do?" is the terminal sentence.

What do you think can be the trouble?

There are more than one trouble.

In the first place, whether in the photographic studio or in the fields, the utmost precaution is necessary in taking off the cap from the lens, for the slightest motion of the camera during exposure is sufficient to produce a negative that will give rise to doubled lines in the enlargement, although such lines are imperceptible in the negative. But such a motion is almost unavoidable in landscape photography; there is rarely an opportunity once in twenty times on days when every leaf is still, and Eolus has shut all his winds. The slightest breeze, the slightest breath of air, will spoil a negative for the purposes in question. Add to this also the flimsy nature of the tripods and cameras, and when we reflect well upon the subject, we shall not wonder that so many lines become doubled when magnified.

Again, it is the common practice to work with short-focussed lenses in getting negatives for the solar camera, or for enlargement otherwise. The consequence is that the principal object, or at least the part focussed, is sharp enough, but all the rest is more or less out of focus. Such a negative is not fit for enlargement. In such an instance as this, the best plan is to retire from the object as far as possible, to use a long-focussed lens, and thus take a small negative at a distance, where every object appears to be in focus. It is worse than useless to include in the picture any part that is in the slightest degree out of focus. For instance, with a lens of twenty inches focus, and at a distance of a quarter of a mile and beyond from the principal object, it is possible to obtain a quarter-plate negative just about sharp enough to admit of being enlarged. A larger plate you can scarcely accomplish.

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* *Philadelphia Photographer.*

Thus, you see, the requisites for success are a perfectly motionless camera during the exposure, and a long-focussed lens used at a long distance.

(*To be continued.*)

PROFESSOR TYNDALL ON LIGHT.*

Let us now turn our attention to the light which passes unscattered among the particles. How must it be finally affected? By its successive collisions with the particles the white light is more and more robbed of its shorter waves; it therefore loses more and more of its due proportion of blue. The result may be anticipated. The transmitted light, where short distances are involved, will appear yellowish. But as the sun sinks towards the horizon the atmospheric distances increase, and consequently the number of the scattering particles. They abstract in succession the violet, the indigo, the blue, and even disturb the proportions of green. The transmitted light under such circumstances must pass from yellow through orange to red. This also is exactly what we find in nature. Thus, while the reflected light gives us at noon the deep azure of the Alpine skies, the transmitted light gives us at sunset the warm crimson of the Alpine snows. The phenomena certainly occur *as if* our atmosphere were a medium rendered slightly turbid by the mechanical suspension of exceedingly small foreign particles. . . .

The question that naturally arises is, Can small particles be really proved to act in the manner indicated? No doubt of it. Each one of you can submit the question to an experimental test. Water will not dissolve resin, but spirit will; and when spirit which holds resin in solution is dropped into water, the resin immediately separates in solid particles, which render the water milky. The coarseness of this precipitate depends on the quantity of the dissolved resin. You can cause it to separate in thick clots or in exceedingly fine particles. Professor Brucke has given us the proportions which produce particles particularly suited to our present purpose. One gramme of clean mastic is dissolved in eighty-seven grammes of absolute alcohol, and the transparent solution is allowed to drop into a beaker containing clear water kept briskly stirred. An exceedingly fine precipitate is thus formed, which declares its presence by its action upon light. Placing a dark surface behind the beaker, and permitting the light to fall into it from the top or front, the medium is seen to be distinctly blue. It is not, perhaps, so perfect a blue as I have seen on exceptional days, this year, among the Alps, but it is a very fair sky-blue. A trace of soap in water gives a tint of blue. London (and, I fear, Liverpool) milk makes an approximation to the same colour through the operation of the same cause; and Helmholtz has irreverently disclosed the fact that a blue eye is simply a turbid medium.

Numerous instances of the kind might be cited. The action of turbid media upon light was fully and beautifully illustrated by Goethe, who, though unacquainted with the Undulatory theory, was led by his experiments to regard the blue of the firmament as caused by an illuminated turbid medium with the darkness of space behind it. He describes glasses showing a bright yellow by transmitted, and a beautiful blue by reflected light. Professor Stokes, who was probably the first to discern the real nature of the action of small particles on the waves of ether, describes a glass of a similar kind.† What artists call "chill" is no doubt an effect of this description. Through the action of minute particles, the browns of a picture often present the appearance of the bloom of a plum. By rubbing the varnish with a silk handkerchief optical continuity is established, and the chill disappears. Some years ago I witnessed Mr. Hurst experimenting at Zermatt on the turbid water of the Visp, which was charged with the finely divided matter ground down by the glaciers. When kept still for a day or so, the grosser matter sank, but the finer matter remained suspended, and gave a distinctly blue tinge to the water. No doubt the blueness of certain Alpine lakes is in part due to this cause. Prof. Roscoe has noticed several striking cases of a similar kind. In a very remarkable paper the late Principal Forbes showed that steam issuing from the safety valve of a locomotive, when favourably observed, exhibits, at a certain stage of its condensation, the colours of the sky. It is blue by reflected light, and orange or red by transmitted light. The effect, as pointed out by Goethe, is, to some extent, exhibited by peat smoke. More than ten years ago I amused myself at Killarney by observing, on a calm day, the straight smoke-columns rising from the chimneys of the cabins. It was easy to project the lower portion of a column against a dark pine, and its upper portion against a bright cloud. The smoke in the former case was blue, being seen mainly by reflected light; in the latter case it was reddish, being seen mainly by transmitted light. Such smoke was not in exactly the condition to give us the glow of the Alps, but it was a step in this direction. Brucke's fine precipitate above referred to looks yellowish by transmitted light, but by duly strengthening the precipitate, you may render the white light of noon as ruby-coloured as the sun when seen through Liverpool smoke, or upon Alpine horizons. I do not, however, point to the gross smoke arising from coal as an illustration of the action of small particles, because such smoke soon absorbs and destroys the waves of blue instead of sending them to the eyes of the observer.

These multifarious facts, and numberless others which cannot now be referred to, are explained by reference to the single principle, that where the scattering particles are small in comparison to the size of the waves, we have in the reflected light a greater proportion of the smaller waves, and in the transmitted light a greater proportion of the larger waves, than existed in the original white light. The physiological consequence is, that in the one light blue is predominant, and in the other light orange or red. And now let us push our enquiries forward. Our best microscopes can readily reveal objects not more than 1-50,000th of an inch in diameter. This is less than the length of a wave of red light. Indeed, a first-rate microscope would enable us to discern objects not exceeding in diameter the length of the smallest waves of the visible spectrum. By the microscope, therefore, we can submit our particles to an experimental test. If they are as large as the light-waves they will infallibly be seen; and if they are not seen it is because they are smaller. I placed in the hands of our President a bottle containing Brucke's particles in greater number and coarseness than those examined by Brucke himself. The liquid was a milky blue, and Mr. Huxley applied to it his highest microscopic power. He satisfied me, at the time, that had particles of even 1-100,000th of an inch in diameter existed in the liquid they could not have escaped detection. But no particles were seen. Under the microscope the turbid liquid was not to be distinguished from distilled water. Brucke, I may say, also found the particles to be of ultra-microscopic magnitude.

But we have it in our power to imitate far more closely than we have hitherto done the natural conditions of this problem. We can generate in air, as many of you know, artificial skies, and prove their perfect identity with the natural one, as regards the exhibition of a number of wholly unexpected phenomena. By a continuous process of growth, moreover, we are able to connect sky-matter (if I may use the term) with molecular matter on the one side; and with molar matter, or matter in sensible masses, on the other. In illustration of this, I will take an experiment described by M. Morren, of Marseilles, at the last meeting of the British Association. Sulphur and oxygen combine to form sulphurous acid gas. It is this choking gas that is smelt when a sulphur match is burnt in air. Two atoms of oxygen and one of sulphur constitute the molecule of sulphurous acid. Now it has been recently shown in a great number of instances that waves of ether issuing from a strong source—such as the sun or the electric light—are competent to shake asunder the atoms of gaseous molecules. A chemist would call this, "decomposition" by light; but it behoves us, who are examining the power and function of the imagination, to keep constantly before us the physical images which we hold to underlie our terms. Therefore I say, sharply and definitely, that the components of the molecules of sulphurous acid are shaken asunder by the ether waves. Enclosing the substance in a suitable vessel, placing it in a dark room, and sending through it a powerful beam of light, we at first see nothing—the vessel containing the gas is as empty as a vacuum. Soon, however, along the track of the beam a beautiful sky-blue colour is observed, which is due to the liberated particles of sulphur. For a time the blue grows more intense; it then becomes whitish; and from a whitish-blue it passes to a more or less perfect white. If the action be continued long enough, we end by filling the tube with a dense cloud of sulphur particles, which, by the application of proper means, may be rendered visible.

Here, then, our ether waves untie the bond of chemical affinity, and liberate a body—sulphur—which at ordinary temperatures is a solid, and which, therefore, soon becomes an object of the senses. We have first of all the free atoms of sulphur, which are both invisible and incompetent to stir the retina sensibly with scattered light. But these atoms gradually coalesce and form particles, which grow larger by continual accretion, until, after a minute or two, they appear as sky-matter. In this condition they are invisible themselves, but competent to send an amount of wave-motion to the retina sufficient to produce the firmamental blue. The particles continue, or may be caused to continue, in this condition for a considerable time, during which no microscope can cope with them. But they continually grow larger, and pass by insensible gradations into the state of *cloud*, when they can no longer elude the armed eye. Thus, without solution of continuity, we start with matter in the molecule, and end with matter in the mass, sky-matter being the middle term of the series of transformations.

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* Continued from p. 466.

† This glass, by reflected light, had a colour "strongly resembling that of a decoction of horse-chesnut bark." Curiously enough, Goethe refers to this very decoction: "Man neheme einen Streifen frischer Rinde von der Rosskastanie, man stecke denselben in ein Glas Wasser, und in der kürzesten Zeit werden wir das vollkommenste Himmelblau entstehen sehen."—Goethe's *Werke*, b. xxix. p. 24.

Instead of sulphurous acid, we might choose from a dozen other substances, and produce the same effect with any of them. In the case of some—probably in the case of all—it is possible to preserve matter in the skyey condition for fifteen or twenty minutes under the continual operation of the light. During these fifteen or twenty minutes the particles are constantly growing larger, without ever exceeding the size requisite to the production of the celestial blue. Now when two vessels are placed before you, each containing sky-matter, it is possible to state with great distinctness which vessel contains the largest particles. The eye is very sensitive to differences of light, when, as here, the eye is in comparative darkness, and when the quantities of wave-motion thrown against the retina are small. The larger particles declare themselves by the greater whiteness of their scattered light. Call now to mind the observation, or effort at observation, made by our President when he failed to distinguish the particles of resin in Brucke's medium, and when you have done so follow me. I permitted a beam of light to act upon a certain vapour. In two minutes the azure appeared, but at the end of fifteen minutes it had not ceased to be azure. After fifteen minutes, for example, its colour, and some other phenomena, pronounced it to be a blue of distinctly smaller particles than those sought for in vain by Mr. Huxley. These particles, as already stated, must have been less than 1-100,000th of an inch in diameter. And now I want you to submit to your imagination the following question: Here are particles which have been growing continually for fifteen minutes, and at the end of that time are demonstrably smaller than those which defied the microscope of Mr. Huxley:—*what must have been the size of these particles at the beginning of their growth?* What notion can you form of the magnitude of such particles? As the distances of stellar space give us simply a bewildering sense of vastness without leaving any distinct impression on the mind, so the magnitudes with which we have here to do impress us with a bewildering sense of smallness. We are dealing with infinitesimals compared with which the test objects of the microscope are literally immense.

From their previousness to stellar light, and other considerations, Sir John Herschel drew some startling conclusions regarding the density and weight of comets. You know that these extraordinary and mysterious bodies sometimes throw out tails 100,000,000 of miles in length, and 50,000 miles in diameter. The diameter of our earth is 8,000 miles. Both it and the sky, and a good portion of space beyond the sky, would certainly be included in a sphere 10,000 miles across. Let us fill this sphere with cometary matter, and make it our unit of measure. An easy calculation informs us that to produce a comet's tail of the size just mentioned, about 300,000 such measures would have to be emptied into space. Now suppose the whole of this stuff to be swept together, and suitably compressed, what do you suppose its volume would be? Sir John Herschel would probably tell you that the whole mass might be carted away at a single effort by one of your dray-horses. In fact, I do not know that he would require more than a small fraction of a horse-power to remove the cometary dust. After this you will hardly regard as monstrous a notion I have sometimes entertained concerning the quantity of matter in our sky. Suppose a shell, then, to surround the earth at a height above the surface which would place it beyond the grosser matter that hangs in the lower regions of the air—say at the height of the Matterhorn or Mont Blanc. Outside this shell we have the deep blue firmament. Let the atmospheric space beyond the shell be swept clean, and let the sky-matter be properly gathered up. What is its probable amount? I have sometimes thought that a lady's portmanteau would contain it all. I have thought that even a gentleman's portmanteau—possibly his snuff-box—might take it in. And whether the actual sky be capable of this amount of condensation or not, I entertain no doubt that a sky quite as vast as ours, and as good in appearance, could be formed from a quantity of matter which might be held in the hollow of the hand.

Small in mass, the vastness in point of number of the particles of our sky may be inferred from the continuity of its light. It is not in broken patches nor at scattered points that the heavenly azure is revealed. To the observer on the summit of Mont Blanc the blue is as uniform and coherent as if it formed the surface of the most close-grained solid. A marble dome would not exhibit a stricter continuity. And Mr. Glaisher will inform you that if our hypothetical shell were lifted to twice the height of Mont Blanc above the earth's surface, we should still have the azure overhead. Everywhere through the atmosphere those sky-particles are strewn. They fill the Alpine valleys, spreading like a delicate gauze in front of the slopes of pine. They sometimes so swathe the peaks with light as to abolish their definition. This year I have seen the Weisshorn thus dissolved in opalescent air. By proper instruments the glare thrown from the sky-particles against the retina may be quenched, and then the mountain which it obliterated starts into sudden definition. Its extinction in front of a dark mountain resembles exactly the withdrawal of a veil. It is the light then taking possession of the eye, and not the particles acting as opaque bodies, that interfere with the definition. By day this light quenches the stars; even by moonlight it is able to exclude from vision all stars between the fifth and eleventh magnitude. It may be likened to a noise, and the stellar radiance to a whisper drowned by the noise. What is the nature of the particles which shed this light? On points of controversy I will not here enter, but I may say that De la Rive ascribes the haze of the Alps in fine weather to floating organic germs.

Correspondence.

MOONLIGHT AND PHOTOGRAPHY.

A worn subject, I admit. My apology for the present jottings must be the increasing popularity of the subject—a popularity, perhaps, heightened by the veil of mystery that appears to hang over them. The late exhibition in Cornwall has been the happy medium of bringing out some of the finest specimens of this class of picture that have yet been produced amongst them. I could mention the charming pictures of Messrs. Robinson and Cherrill, which, from their deserved merits, won such universal admiration.

I will not occupy your valuble space by surmising how these pictures were produced. "Possibly" they may have been taken, as their titles would suggest, by the light of the moon. If the subject had been a landscape on a calm still night, with a lengthened exposure, there would, doubtless, be a possibility of getting some kind of a picture on the plate; but to take a view by moonlight of distant seas, full of restless motion, with near waves rolling in and dashing their foam-crested heads in scattered fragments on the beach, with all the masses of light and shade, and every detail exquisitely rendered, is, even at the present advanced state of our art, rather astounding; and then, again, in the combination picture, "The beached margent of the sea,"—what a happy combination of circumstances!—breaths of light and shade, sea and sky, so exquisitely blended, and, above all, a solitary sea fowl stopped in its wild flight at the spot, above all others in the picture, where the snowy white of its wings, contrasted against the dark shadow of the breaking wave, could give such pictorial effect. If one could only secure such an effect at one exposure and on one plate, surely the felicity of developing such a picture would be one of the bright spots in an artist's life. Imagine the artist's rapturous glee on seeing each successive beauty gradually emerge from the fair white film.

But, to turn from idle surmising to the pith of the matter in hand, the question naturally arises, How are such pictures produced? To quote Mr. Robinson's own words in the Year-Book of Photography for 1870, in reference to photographing the sky and landscape on one plate, he remarks:—

"Many ingenious arrangements have been contrived to take the sky with the landscape on one plate, but this is a haphazard way of making pictures that may occcasionally produce good results, but which would more often end in pictorial failure. It is not always that an appropriate sky occurs behind a landscape at the time you may wish to take it, or when it is most beautifully lighted, whatever some critics may say to the contrary. This being so, we will dismiss these methods, even if successful technically, which they have failed to be hitherto, as not being those by which the best and most pictorial effects may be attained, and will go at once to the only method at present devised by which skies suiting the landscape in every respect, pictorially as well as truthfully, may be used—that by which the sky and landscape are taken separately, and afterwards combined in the print."

Now mark the correctness and value of the next few lines:—

"The truth of a picture so treated must depend on the artist's judgment and familiarity with nature and her effects; the pictorial character must rest on his knowledge of art."

It is evident from this that Mr. Robinson's views are in favour of combination printing, and his last moonlight pictures give strong evidence of the fact. In one of the best of the last series this is particularly noticeable. The drawing of the sea and clouds, the superb breaths of light and shade, and exquisite detail, leave nothing to be desired; but, upon close examination, one is apt to wonder why the sea should be so brilliantly illuminated when the sky and clouds above, though perfect as a skyscape, should be so much more sombre in tone. It requires a strong imagination to believe the light comes from the moon above. If the moon was less crude and more harmonious with the sea and sky, the picture would be a perfect gem; but in the present state it unfortunately suggests the effect a yellow wafer would have fixed upon the negative in the printing frame.

But to turn again to the possibility of producing moonlight pictures. In the first place, we know that with the quickest-acting lens and the most sensitive chemicals, it would be impossible to produce a correct representation of moving objects by the light of the moon. If there is a possibility of producing pictures by moonlight it can only be done by a very lengthened exposure; and every photographer knows in his daily practice, and with the strong actinic power of the sun's rays, that if he wishes to photograph quick-moving objects it can only be done by instantaneous exposure—premising, of course, that there is no particular method more exquisitely sensitive than generally known by the majority of photographers. If, then, we have no method sufficiently sensitive to produce such effects by moonlight, it is very clear that they must be produced by the ordinary rays of the sun. That pictures taken in brilliant sunlight can be made to represent moonlight effects has been abundantly proved.

The next question is, What is the difference between sun and moonlit pictures? The difference in a photograph would be in the superior brilliancy and intensity of the sunlight picture. It is quite evident that whether the photograph is taken by sun or moonlight, the actual colour of the photograph would be the same—the exact tone at the artist's disposal. This being the case, the real difference would be in the lighting of the subject. In sunlight we have every object brilliantly illuminated—the detail in the darkest shadows beautifully distinct; whereas in moonlit subjects the details in dark shadows are entirely lost, unless it be in very near objects. The most brilliant parts are distinct and full of detail, but in parts lying in deep shadows forms are only indicated by masses of light and shade, the most brilliantly lighted parts only visible, the rest one mass of deep shadows. For this reason, a photograph taken instantaneous would be apt to favour this illusion. Photography has a natural tendency to exaggerate shadows, making it appear deeper than it really is in nature; therefore, a photograph taken instantaneously (or, as we may say, in the mere fraction of a second), the most brilliantly lighted parts would be distinct; but the shadow portions, having less actinic force, would come out in masses of light and shade with scarcely any detail visible. I do not intend to state that any view taken in broad sunlight would make a good moonlight subject; it must be a subject carefully selected and full of contrast, selected for the special purpose, and with an artist's eye for the finished picture.

With a negative of that description, an intelligent photographer would have no difficulty in producing a moonlight effect. As a matter of course, a great deal would depend upon the printing. It should be printed very deep; and, while trying to secure a rich depth of shadows, to preserve the high lights brilliant and sparkling. With ordinary intelligence, a careful study of the various effects in nature he wishes to produce, a photographer will not find much difficulty in producing some fascinating results; but where a photographer happens to be an artist in the true sense of the word, who enters the field with a thorough practical knowledge of the mechanical part of his art, from long practice familiar with every trick that may be legitimately used to produce certain effects, and with capital and leisure to avail himself of all the latest improvements for the work; who, added to this, has a natural and untiring love for the work, a taste cultivated by years of study of what is beautiful in nature and art—then photography, in his hands, as a means of producing artistic effects, becomes a new and wondrous art; he can seize from nature's vast stores the most exquisite bits for pictorial effect, and, with his art knowledge and skill, so blend and unite them that the resulting picture shall equal, if not surpass, the beautiful ideal mirrored in his own soul. T. B.

CARDIFF FINE ART AND INDUSTRIAL EXHIBITION.

Sir,—The above exhibition was closed on the first instant, and your readers have already had placed before them a few details from the local journals, but I hope that a few observations—the result of the notes I made on the several visits I paid to the exhibition—may not be without interest in the News.

The first pictures which, by their importance, claim attention, are a collection of eleven large studies by Robinson and Cherrill. They embrace most of the recent celebrated pictures by these artists. No one could doubt the excellence of the pictures, but, personally, I was sorry to see such fine pictures spoilt by what appeared to me as imitation gulls, &c., being introduced into them. This is especially the case with the one called "Sea Gulls," about which there has been so much written in the News and elsewhere. This picture would, in my opinion, have been a much finer composition had these sham gulls been left out. I venture to say that there would not have been one-half the puzzling and writing about this picture had the writers seen it.

The "First Hour of Night" is another instance, to my mind, of a like character. These pictures are far too good to be thus spoiled; and such artists as Robinson can well afford to let such sham effects alone, and leave them to those who, from want of ability, require some sensation to pass off their productions. What a relief to turn from these pictures to look upon such as the "Gleaners Returning Home"! This is, indeed, a grand picture. Full of atmosphere, the sky deserves especial attention, being apparently printed from two or more separate negatives with great skill. The manner in which the shadow of the clouds is thrown across the landscape is also very effective. Near these are some fine photographs of large size by "Amateur Photo."—who, by-the-bye, turns out to be Mr. R. Crawsbay, of Carfarthfa Castle. The picture which most deserves attention is a very fine "Rembrandt" of two girls. The figures are three-quarter length, sitting in profile, with the light striking nearly full in the faces. The profile of the nearest figure is strikingly brought out against the shadowed cheek of the second figure, which, in its turn, is relieved against a dark curtain. The back of the figures is nicely relieved by a little light thrown on the background. An open book in the hands brightens up the whole, and is echoed by a small portion of light judiciously introduced on the edge of the picture, in front of the faces.

On the other side of Robinson's pictures are two very fine portraits of large size by V. Blanchard, entitled "Gentleman of Charles the Second's Period," and "Lady in Sunlight." The latter seems to be wrongly named, for the light is not of that sparkling kind which characterizes sunlight, but rather that of sunlight filtered through a white screen.

The next pictures which claim attention are fifteen 12 by 10 landscape and architectural subjects by Bedford. They are all truly fine pictures, and well sustain the high character which Bedford has attained. T. G. Hew, Cardiff, shows some very nice coloured portraits and views. A pair (8 by 5), of "Mill Beck, Windermere," are gems; a 10 by 8 of "Raglan Castle" is also a good picture; "The Keep, Cardiff Castle," is not so good, being deficient in chiaroscuro, and too heavily covered with colour.

In various parts of the room are a large number of pictures, plain and coloured, by Andrews, Swansea, some of which deserve attention. A small portrait in oil of Mr. Fowler, of Merthyr, is very well painted, and is also a very characteristic likeness. A larger portrait of Brindley Richards, the well-known musical composer, is a very good picture; but there is one of the same size, of a gentleman sitting, which is less effective. The same may be said of a group of three ladies. A case of "Rembrandts" is worthy of notice, the centre one being very good. A case of children's portraits is also very interesting.

Near these is a collection of plain photographs by Griffiths, of Brecon, but they do not call for any particular notice.

There is also a very large collection of photographs contributed by the Science and Art Department of the South Kensington Museum, but they are not of very great interest to photographers.

The exhibition altogether is very satisfactory, considering that it is the first of its kind held in Wales, but I hope it will not be the last. Thomas Forrest.

Cambrian Studio, Pontypridd.

PERMANENT SENSITIVE PAPER.—LIVERPOOL DRY PLATES.

Sir,—May I crave space in your Journal to enquire if any of your readers can give me the formula to prepare the permanent sensitized paper as sent out by Carrier?

Since this unfortunate war his agent does not receive it, and I should esteem it a great boon if I could receive the necessary instructions for preparing it. Or it is possible that there may be some other paper that would answer its purpose equally well.

It has often struck me as very remarkable that there has been so little notice taken of the said paper. It is, undoubtedly, one of the greatest helps that could be conferred on amateur photographers who, like me, are not able to devote much time, or throw away money, on our hobby. I have, lying by me, many scores of half and quarter-sheets perfectly bronzed, and I need scarcely say how much hard cash they represent, nor how much lost time and annoyance have been caused. But with Carrier's paper every inch can be made available: the trimmings and small strips come in for small miniature groups and locket portraits.

Formerly I was obliged to keep all my negatives till I could steal a holiday from business; then I would prepare the paper the night before, being generally occupied till the small hours of the morning; and then, *if* the weather was unfavourable— But I need not continue. Now all is *couleur de rose.* I print off one or two pictures before going to town of a morning, and keep them until a favourable Saturday, when I can take a half holiday, which I devote to toning, &c.

I have lately made use of some paper which I purchased in September, 1869; and, after keeping the prints from one to ten days, have just toned and fixed them with the greatest success.

I should like also to mention, for the benefit of my brother amateurs, the wonderful success and saving that I have had in using the Liverpool Dry Plates. I will not run down other plates, but I do wish to make it known that the Liverpool Dry Plates are as near perfection as possible. Last year I brought back from the sea-side two plates in one of my camera-frames. They have been kept, without special care, in my dark room; and this year, just twelve months after purchase, I have exposed them, and obtained perfect results, as good as on freshly-purchased plates. I do think that such results should be known to my brother amateurs; and, as I have arrived at the results by costly experience, I shall be happy to afford any of your readers more particulars; and, therefore, instead of using a *nom de plume*, beg to subscribe myself as your old subscriber for five years,

C. W. Major.

Cromwell House, Croydon, 3rd October, 1870.

[Carrier's permanent sensitive paper, as well as all the papers of similar character in the market, is prepared by a secret formula. Our correspondent can still obtain Durand's permanent albuminized paper, and Henderson's as prepared by Cooke, as well as Obernetter's, all of which are equal to Carrier's. Perhaps the latter might keep a greater number of months, but it gave somewhat less vigour. Has our correspondent tried the method of washing sensitive paper, in order to secure keeping qualities, of which full details have been recently given in our pages?—Ed.]

REPRODUCED NEGATIVES.

Dear Sir,—I do not know what Mr. Blair may have to say to your foot-note to his last article on "The Autotype Company and their Productions," with reference to the reproduction of negatives, but I want to have a word on the subject.

You observe, "Our esteemed contributor seems to overlook the fact that as yet the usual processes for reproducing negatives invariably yield negatives less perfect than the originals." Now, from considerable practical experience, I must say that such is not the case. Negatives can be reproduced quite equal to the originals. Indeed, taking the ordinary run of negatives, the reproductions, in the majority of cases, may possess superior qualities. Of course, it will be asked, "Where is the proof?" Well, pressing business prevents me sending you any just now, but I hope to do so soon, and I further hope to illustrate this at the forthcoming November exhibition, if such things be thought to possess sufficient interest.—I am, dear sir, faithfully yours,

4th October, 1870. J. W. Pickering.

[We shall be very glad if our correspondent can prove that we are in error in relation to the inferiority of reproduced negatives. We hope he will exhibit examples at the forthcoming exhibition, and, in the meantime, he can do still more to prove his position by publishing the method employed, and enabling a host of witnesses to corroborate his statement. We shall have much pleasure in seeing examples of such negatives, and in giving insertion to any communication on the subject.—Ed.]

◆

Proceedings of Societies.

Liverpool Amateur Photographic Association.

The usual monthly meeting of this Association took place on Tuesday, the 27th ult., at the Free Library, William Brown Street, the President, Mr. John Henderson, occupying the chair.

The minutes of the last meeting were read and passed, Mr. J. Leader Williams's proposal for a photographic competition being corrected to read as follows:—"Resolved, that there be a photographic competition of pictures taken in 1870; the producer of the best of the undernamed sets to receive two-thirds of the others shown in competition, the second best the remainder of the same size.

Stereo., and not exceeding	... 5 by 4,	six in number.
5 by 4, ,,	... 8 by 5,	six ,,
8 by 5, ,,	...10 by 8,	three ,,
10 by 8, ,,	...12 by 10,	three ,,

The prints to be mounted, and exhibited at the first meeting in January, 1871."

An amendment, proposed by Mr. O. R. Green, seconded by Mr. Wilson, was carried, namely:—"That a competition take place amongst the members, each competitor to exhibit—

Of photographs under	20	square inches	... six in number.
,, ,,	40	,,	... six ,,
,, ,,	80	,,	... three ,,
,, ,,	120	,,	... three ,,

The exhibitor of the best set of each class to take two-thirds of the photographs of the same class; his own photographs exhibited to become the property of the Association. The second best exhibitor to take the remaining third of the same class of picture."

The Secretary gave the meeting a report of what had transpired at the Council meetings in reference to the British Association, and also of the selection of presentation prints to be issued at the November meeting. He also read the reports that had appeared in the *British Journal* and the Photographic News on the *soiree* of the British Association, held in St. George's Hall on the 20th September, so far as they related to photography, commenting upon some points and referring to some inaccuracies.

On the motion of Mr. O. R. Green, seconded by Mr. Henderson, a vote of thanks was passed to Mr. Joseph Guyton for his services in connection with the Society at the recent meeting of the British Association.

Mr. Green thought that the Society ought to put on record its regret that scientific men did not take more interest in photography, as proved by there being no papers read upon the subject at the meeting of the British Association.

Mr. Guyton said that scientific men made every possible use of photography. In the observatories, in the war department, in the production of maps, and in numerous other ways it was employed, and the results of the investigation of others were fully availed of; processes and modes of manipulation were, for the most part, left to outsiders.

A second excursion to Marple was proposed; but so few seemed desirous of availing themselves of the offer of a leader on the occasion, that it was abandoned.

Before the meeting closed, Mr. Guyton announced his intention of relinquishing the office of Secretary at the conclusion of the session, to which period he would continue to fulfil the duties of the office, if circumstances would permit him to do so. The intimation seemed to take the meeting somewhat by surprise, and he was most kindly pressed to reconsider his resolution, which, however, he did not see his way to do.

There were exhibited the presentation prints proposed for the present year; a print of great sharpness of Lillishall Abbey, taken from a paper negative, shown by Messrs. Cook; two large circular prints from sculptures, by Thorwaldson, *Night* and *Morning*, exhibited by Mr. John Henderson; a number of leaf prints and views near Gresford, by Mr. William Murray; and four views of Furness Abbey, by Mr. Phipps.

The meeting shortly afterwards adjourned to Tuesday, the 25th inst.

Pennsylvania Photographic Association.

We give an abstract from the report of the *Philadelphia Photographer* of this Society, which contains some interesting details.

The first meeting of the season was held at No. 822, Arch Street, on Thursday evening, Septemper 8th, the President. William H. Rhoads, Esq., in the chair. Minutes of the last meeting were read and approved.

A negative was shown with a very peculiar effect. The film seemed to be eaten away under the varnish, and a yellowish granulated substance seemed to have deposited over parts of the plate. It was examined with a great deal of interest, and considerable discussion followed. Some averred that the effect was caused by using pyrogallic acid and iron developer. Mr. Tresize stated that once upon a time, suddenly all his negatives assumed that appearance the moment the varnish was applied. No lack of washing could have caused it, for in that he was careful. After examining everything, he concluded it was the cotton, and as soon as he used a different sample the trouble vanished.

Mr. **Shoemaker** said it was caused by imperfect washing after fixing with hypo, and he could prove it by several solar negatives he had, which were not varnished. For this reason he always recommends cyanide for fixing solar negatives. More careful washing would stop the annoyance. The general opinion of those present was, that Mr. Shoemaker was correct. He offered to take the negative, make a positive, and enlarge it in the lantern at the next meeting. At Mr. Cremer's suggestion it was resolved that the members furnish their cartes, to be hung in the room of meeting.

Mr. **Wilson** suggested that when defects, failures, and excellencies were found, that they be brought to the meetings and freely shown.

Mr. **Shoemaker** said that if the members would bring such negatives as presented any peculiar defects, he would make transparencies from them for the lantern, and exhibit them at the next meeting.

Mr. **Tresize** recounted some experience he had seen with prints turning yellow. He visited a gallery in Illinois, and the complaint was made to him that for days nothing but yellow prints had rewarded the efforts of the poor photographer. The water supply was obtained through iron pipes, and these were at once suspected, so the water was carried from the hydrant below to the tank in buckets. Still the prints turned yellow. The buckets were then inquired for, and examined. Upon cross-questioning it was found that one of them had been used for carrying waste fixing solution down stairs, and although it was afterwards well washed, still enough of the hypo remained to damage any amount of prints.

Some specimens of the new "Hot Cast Porcelain" glass were shown, which, for regularity of *thin*-ness, straightness, and colour, were unequalled.

Some specimens were also shown of both a cream tint and a greenish tint, which must be very effective in contrast with the rich, warm tones attainable on porcelain glass.

Talk in the Studio.

"Art, Pictorial and Industrial."—The fourth issue of this excellent serial contains some capital photographic reproductions and subjects from nature, very well rendered by Mr. Edwards's Heliotypic process. An article on the mode of working also appears, which we shall reprint in our next.

The Turret Ship "Captain."—We have received from Mr. James, of Ryde, cabinet and card photographs of the noble turret ship "Captain," the recent melancholy loss of which cast such a gloom over this country. One photograph represents her afloat, in perfect trim, in a smooth sea. a portion of her canvas being spread. The second picture shows her lying on her beam ends, just before her fatal capsizing. They are both from effective paintings by Mr. W. E. Atkins. Mr. James has also sent us a fine cabinet photograph of a sunset off Ryde Pier.

Photography and the Birkbeck Institution.—This institution has just issued its prospectus for the winter season. Some necessary alterations having been made in the class-rooms, and the list of classes been much extended (giving greater facilities for instruction in all branches of education to both ladies and gentlemen), arrangements have been made by which a complete course of technical instruction can be obtained. A special course of lectures on the "History of Art" will also be delivered by Dr. G. G. Zeiffe. These will be illustrated by about 3,000 diagrams, plans, maps, and photographs. The library has also been greatly improved, and the reading room well supplied with current literature.

Photographs and the Halfpenny Postage.—The *Daily News* says:—"The first actual work of the Post Office in transmitting circulars at the half-penny rate may be reported, as it illustrates the value and probable future working of the new system. Mr. Mayall, the well-known photographer, having accumulated 100,000 negatives of portraits photographed by himself and his sons since 1855, conceived the idea of preparing 100,000 circulars in facsimile handwriting to address to "his patrons, past and present," all to be posted by the very first dispatch under the new law. The whole number, having been previously addressed, were stamped during the small hours of Saturday morning, were posted before daybreak, and—as far as London is concerned—were delivered soon after 8 a.m. One solitary circular (misdirected) found its way back in the evening. Each lithograph letter was open at both ends; it enclosed an ordinary printed price list of four pages, and included. also, a card bearing in writing the name and number indicating the identical picture of the person addressed, written particulars to this extent being permitted by the Postmaster-General.

Obituary.—We announce with regret the death of William Allen Miller, M.D., F.R.S., Professor of Chymistry in King's College, London. Dr. Miller died of apoplexy on the 30th ult., at Liverpool. whither he had gone to take part in the proceedings of the British Association. Dr. Miller was born at Ipswich on the 17th of December, 1817, and in his twenty-fourth year he became assistant to the late Mr. Daniell, Professor of Chymistry in King's College, London. In 1844 he co-operated with his master in the publication of a paper on the "Electrolysis of Secondary Compounds." In the following year he was elected a Fellow of the Royal Society, and succeeded Mr. Daniell in the chair of chymistry in King's College. He has done much good work in connection with the science to which he was devoted, the nature and laws of light having attracted his especial attention. His experiments on the light transmitted by various transparent media are familiar to photographers.

Status of Photographers in America.—Dr. Vogel says: "In Germany, where prejudice so often hinders free development, the photographer is generally but little esteemed, and rarely considered an artist. Here in America, where such a difference of rank is unknown, he enjoys a much higher position, if he be able to fill it. Here the photographer is the chief representative of creative art, and is not forced to submit to the arrogance of artists. The public, also, when being grouped, or at any time having their pictures taken, generally place themselves under the orders of their photographer, instead of insinuating and insisting upon managing the job themselves."

A Strange Story of a Photograph.—The *Pall Mall Gazette* relates the following:—"About ten days ago a Frenchman, Monsieur M—— arrived at Hastings, and demanded an audience of the Empress Eugenie. As his name was not known to Her Majesty, the request was refused. Foiled in this attempt, Monsieur M—— contrived to fall in with the Prince Imperial in one of his daily walks. He professed great devotion to the Napoleonic cause, and it will surprise no one that the Prince should enter readily into conversation with one whom he believed to have been driven from France by his devotion to the Imperial dynasty. These walks were repeated several days, and in the end M—— asked the Prince to make him a present of one of his photographs, with the additional distinction of the Prince's own autograph appended. This natural request was at once acceded to, with the kindly good nature which appears to be a part of the young exile's disposition. The photograph obtained, M—— appeared no more in the morning walks. It has since appeared that on leaving Hastings M—— made his way to the German army before Metz, and obtained a pass through the lines into the beleaguered city. It seems that among the generals associated with Marshal Bazaine in the defence of that fortress there was one General B——, who had, as was well known in the Prussian army, distinguished himself by his zeal and intelligence in carrying on the gallant resistance to the enemy which has already won the admiration as well as the astonishment of both nations. Arrived in Metz, it was to this General B——, so valuable for the safety of the French garrison, that M—— at once addressed himself. He told General B—— that he had an important message to him from the Empress Eugenie, and as his credentials he presented the photograph of her son with the signature attached. He added that the Empress desired the immediate presence of General B—— in England, that she had a special mission to intrust to him on the successful issue of which the future of the war would mainly depend, and that Her Majesty dared not put it in writing lest it should fall into the hands of the enemy. General B—— at once obeyed the commands of the Empress, and, as he thought, with difficulty: but, as the story reaches us, it would seem to have been with the connivance of the Prussian authorities thta he got through the lines of the besiegers, and, making the best of his way to England, arrived a few days since at Camden Place, near Chiselhurst, where the Empress is now residing. The surprise of the Empress Eugenie at seeing the General was very great, and, after a few words of explanation, it was discovered that general B—— had been the victim of a very novel, if not very creditable, *ruse de guerre*, by which the gallant army of Metz had been deprived of the services of one in whom, on account of his gallantry and intelligence, they had reposed the most perfect confidence. By the last accounts that reached us the gallant general was still in England, trying to arrange his return to his comrades, but he will probably not find the Imperial photograph such a good pass through the Prussian Lines for him this time as it proved for the enterprising M—— last week.' The general referred to was General Bourbaki. He was permitted to pass through the Prussian lines on his return to Metz.

To Correspondents.

C. E. F.—In asking for a plain paper process, you do not state whether you wish to prepare the paper yourself, or to purchase salted paper ready for use. If the latter, obtain arrowroot paper, float on a 40-grain silver bath, use a vigorous negative, and tone with a lime bath not too strong and not too new. This will give you good prints of a black tone. If you wish to prepare your own paper, float it on or brush it with a salting solution made as follows:—

Water … … … …	1 ounce
Chloride of ammonium … …	5 grains
Citric acid … … … … …	1 grain
Gelatine … … … … …	1 „

Heat must be used first to get the gelatine into solution. It will afterwards remain so. Float on a 40-grain silver bath, and proceed as we have described. It is possible to get black tones with almost any of the toning baths; but the lime bath is favourable to such a result. Plain paper is apt to get over-toned; it is well, therefore, to use an old and a weak toning bath. A more vigorous negative is generally required with plain paper than with albuminized paper. If only a few plain paper prints are required, using albuminized paper, floating it with its back on the printing bath, may be made to give very good results.

FIX.—You may try Col. Wortley's method with any toning bath. That gentleman gave his formula for preparing the double chloride of gold and potassium in our issue for August 1[illegible]th. 2. In asking us why a toning bath fails to tone, you should have stated how the toning bath had been prepared. Sometimes a toning bath fails to tone because it is exhausted; sometimes because the gold is reduced and precipitated; sometimes because the gold is converted into oxide. As a rule, a toning bath should be neutral, but not alkaline. The chief point of importance is that it should not contain free hydrochloric acid. 3. Blisters in albuminized prints are the result of the film of albumen not being coagulated throughout its whole surface, and also of the use of a stout, hard paper. If the nitrate bath be kept sufficiently strong, and the paper floated on it a sufficient time to coagulate the layer of albumen thoroughly, you will have no blisters. 4. There is no danger of closing up the pores of paper by pressure applied to squeeze out the hyposulphite solution.

C. E. F.—The use of a solution of gum arabic as a final wash for negatives is often very useful. Its advantage is that it checks any tendency in the film to split off in drying, and it prevents any risk of the film being dissolved by the varnish. The strength of the solution may be from five to ten grains of the gum to an ounce of water. We have not met with or heard of any case where it has produced any injurious effect.

G. D. ROBERTS.—The card has been duly registered. The best publishers for photographs are Marion and Co., Soho Square, or the Stereoscopic Company, 54, Cheapside. Our publisher will receive stamps, if you prefer, in payment of small accounts.

E. W. S[illegible].—We do not know of anyone who publishes [illegible] photographs in this country. Either Marion and Co. or the Stereoscopic Company are the most likely to have them.

H[illegible]Y.—Your description of things we have constantly met with. Sometimes it happens that a person sticking in a groove and never moving out of it is successful, but it more frequently happens that he is left behind in the race by more enterprising persons. Regarding the question of toning and fixing in one solution as compared with the modern system, there cannot be a doubt that the latter is much more conducive to permanency. The old system is simple and easy, and sometimes the prints stand pretty well; but in by far the greater majority of cases the prints so produced gradually assume a jaundiced hue, and lose all their pristine beauty. As a basis for good colouring it is pre-eminently important to have permanent prints, as the fading destroys the good work of the painter. The plan of fixing and toning separately is less trouble than you may imagine. The routine is simply this: you print as usual; immerse the prints in common water for a short time to remove free nitrate, by which a large amount of silver is recovered (one washing we think sufficient); then immerse in a toning bath, the time averaging from five to fifteen minutes to secure the right tone (the colour is due to deposit of gold); rinse again, and immerse in a fresh bath of [illegible] for twenty minutes; then wash thoroughly in repeated changes of water. You need not apologize for troubling us. We have pleasure in assisting our readers. We are prevented by the limited space we can devote to answers from giving extensive formulæ here, but these you will find in any good manual, or in the NEWS, or in our YEAR-BOOKS. You will find a useful article on printing on a commercial scale in our YEAR-BOOK for 1864. In making the experiment with the new method, do not hesitate to ask our advice in regard to any special difficulties which may occur. We shall be glad to receive the promised details of your own experience.

PHOTOGRAPHS OF THE ISLAND OF ARRAN.—Can any of our correspondents oblige one of our readers with the address of Mr. Chalmers, who has produced some fine photographs of the Island of Arran?

A BELGIAN SUBSCRIBER.—The best plan to proceed is to add an ounce of nitrate of silver for each quire of paper floated, and sufficient water to make up the bath to its original bulk. Also add the amount of nitrate of soda and sugar, which is in proportion to the water added. 2. The lens you mention is the most rapid lens we know. It will cover a plate 4¼ by 3¼ inches with full aperture, with good definition. 2. For open air work a lens of such extreme rapidity is scarcely necessary, as an ordinary portrait lens is generally sufficiently rapid for instantaneous open-air work in good light. It has necessarily less depth of focus than a lens of smaller angular aperture. For indoor work no lens can be better for rapid work. For open-air work we should select an A lens of the same maker.

H. BROWN.—Thanks.

A. B. ALMOUR (Nova Scotia).—Thanks. The sample to which you refer was not enclosed in your letter, and has not yet arrived in any separate parcel.

THEOPHILUS THIDDLEMITCH.—In our next.

PAUL PRETSCH.—In our next. We gave an abstract of your communication to a Vienna paper.

J. M. COOKE.—We regret that the number for September [illegible]4, 1[illegible], is quite out of print, although we printed a large number of copies extra that week. Should we meet with a copy we will remember your wish.

Several Correspondents in our next.

Photographs Registered.

Mr HOLLAND, Tamworth,
Three Photographs of Drayton Manor.
Mr. FORREST, Ponty-pridd,
Photograph of Mr. J. Thomas.
Mr. J. SYMONDS, Portsmouth,
Photograph of H M.S. "Captain."
Messrs. DAVEY AND CO., Dudley,
Three Photographs of Rev. W. R. Cosens
Messrs. NEWCOMBE AND CO., W. Hartlepool,
Photograph of W. H. Commissioners.
Mr. R. JAMES, Ryde,
Photograph, from Painting, of H M.S. "Captain."
Mr H. F FR[illegible]RER, Torquay,
Photograph of High Altar in St. Mary's Priory.
Mr. JAMES, Ryde,
Photograph of H.M.S. "Captain."
Mr. W JAMES, Wednesbury.
Photograph of Wednesbury Cemetry.
Mr. G. P. ROBERTS, St. John's, New Brunswick,
Photograph of "The Paris Crew" in their Boat.

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THE PHOTOGRAPHIC NEWS.

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CONTENTS.

	PAGE
November Exhibition of Photographs	481
Solar Camera Enlargements	482
Echoes of the Month. By an Old Photographer	482
Photography and Wood Engraving. By Adolf Beyersdorff	484
Enlargements on Collodion Films. By Prof. J. Towler, M D.	484
Manipulations in the Dark Room. By Elbert Anderson	485
On Copying Daguerreotypes	487
Lorenz's Sulphate of Copper Developer. By Fritz Haugk	488
Alleged Piracy of Photographic Reproductions	488
Correspondence.—Photography at Kew Observatory—Preliminary Coatings—Retouching Varnishes—Photography at the British Association—Paul Pretsch's Process—The Recent Charge of Piracy	489
Talk in the Studio	491
To Correspondents	492

THE NOVEMBER EXHIBITION OF PHOTOGRAPHS.

The maintenance of the revived annual exhibition of photographs in London has ceased to be a matter of doubt or question. The increased success which has attended each attempt during the last three years has been sufficient to place the exhibition amongst the most satisfactory of all the institutions connected with photography. The idea suggested three years ago, of opening the session with an exhibition meeting, was so warmly received, and has so rapidly expanded, as to comprehend the maintenance of a regular annual display of the year's progress accessible to the public for several weeks, as a recognized part of the programme of the society.

Just four weeks from the time at which we write the next exhibition of the Society will be opened in the Architectural Gallery, Conduit Street. It is proposed that the exhibition, which will open with a soiree on the evening of Tuesday, November 8th, shall continue open to the public during the whole of the remaining days of the month, thus giving three weeks instead of the shorter time hitherto available for the display of the photographs. This extension of time should be valuable in more ways than one: whilst affording completer facilities for both photographers and the public to visit the Gallery, it will also give additional inducement to photographers to make their contributions more extensive and worthy than they might feel it necessary to do with the prospect of a few days' publicity only. Further, the experiment of issuing a catalogue in the form of a supplement to the Society's Journal, and issuing it in time for use in the exhibition, which, in accordance with our suggestion, was tried last year, will be repeated with more specific care, depending on more organized preparation, to secure completeness and accuracy. It was a gratifying feature of this part of the experiment last year, that the sale of journal catalogues in the room was sufficient to pay, if we remember accurately, the whole expenses of the exhibition.

The precise details and arrangements of the exhibition will be duly made known to the public officially. As we have reason to believe, however, that similar conditions will prevail this year as have done before, with the amplifications we have indicated, we think it important to remind photographers whilst time still remains for initiating or completing arrangements for sending contributions. It should be remembered that all photographers are invited to contribute, whether they are members of the Society or not, and that no charge for space or for any other purpose is made to contributors. All suitable pictures sent in will be hung, the arrangement being left in the hands of the hanging committee. The only cost to the contributor besides the cost of fittings for his pictures will be for the carriage to and from Conduit Street. On the opening evening, members of the Society, their friends, and exhibitors will be admitted, and during the remaining three weeks the public will be admitted on presentation of their cards, or tickets supplied by members. By this arrangement all generally interested in the progress of photography as an art, and all specially interested as prospective sitters to portraitists, are enabled to examine the illustrations of the advance the art is steadily making. The best works of the best exponents of the art are thus yearly brought under the attention of many thousands of the cultivated public, who would otherwise have no such opportunity of becoming acquainted with photographic progress as an important fact.

The interest and value to the photographic community of these annual exhibitions needs no stating. The eager interest with which they are visited by photographers is one of the surest indications that they are duly appreciated. Nothing better illustrates their value than the impetus to excellence they afford. Our own contribution, a few years ago, of some examples of the work of M. Adam-Salomon proved most prolific in incentives to excellence, and the valuable result has been abundantly manifest. We recently received from our friend Mr. Wilson, of Philadelphia, a singularly interesting illustration of the beneficial influence of exhibitions. Until recently anything like a general photographic exhibition in America was unknown. There was no organization of any kind in existence which could project or carry out such an exhibition. The formation of the National Photographic Association, and the holding of its Annual Congress, at once afforded the opportunity, of which the energetic able managers of the Association were not slow to avail themselves. An annual exhibition was organized, which has each year been improving, and many of the photographers wide-spread over the vast American continent, who had little idea of what was done in photography beyond the immediate circle in which they moved, were startled to find the various forms of excellence brought together. To some it was a new revelation: they found that the standard of mechanical excellence of clean black-and-white pictures they had attained, and which they fancied left little to be desired, was tame, commonplace, and comparatively worthless when compared with the work of masters in the art. But many of them at once began to aim at better things, and with success. We received from Mr. Wilson a couple of cards which had been forwarded to him, inscribed at the back, one thus: "Example of work before visiting the exhibition;" and the other thus: "Example of work since visiting the exhibition." They were both portraits of the same lady. The first was clean, brilliant, hard, stiff, mechanical, a mere "elevation" of the sitter; the second was quite as rich, but soft, delicate, artistically posed, with well arranged drapery, altogether a really pleasing picture. English photographers who have been familiar with exhibitions, the isolation of portraitists living out in some of the western towns, and the value of exhibitions to them can scarcely be appreciated; but the influence of such displays, although, possibly, less in degree, is the same in kind and in importance. The exhibition is at once the landmark of progress and the incentive and aid to further effort. This fact is now so well understood that it is scarcely necessary to urge photographers to contribute; it is simply necessary to remind them when and under what conditions they must make their preparations.

Nearly a month remains for getting specimens ready, and as the weather is fine there is still time for printing. All specimens should reach the Secretary of the Society on the fourth of next month, in order that they may be hung and catalogued on the fifth. The following day being Sunday, and the seventh being too late for hanging and cataloguing, nothing should reach the Secretary later than the evening of Friday the fourth or the morning of Saturday the fifth. For the convenience of the managers of the Gallery, nothing should arrive earlier than the fourth. All packages should be addressed, carriage paid, to the Secretary of the Photographic Society, at the Architectural Gallery, No. 9, Conduit Strret, Regent Street; and a letter of advice, containing a statement of the number of contributions, the titles of the pictures, and such particulars of process, &c., as may be desirable, should also be forwarded to the Secretary at the same time. It is important that some precision in these matters should be observed, to permit the satisfactory management of the exhibition. We remember that last year a contribution was brought to the exhibition after it opened, and simply placed on the table by the owner. It was unfortunately lost or misappropriated, and having been given into the charge of no one, no trace of it could be found, an issue eminently unsatisfactory to every one. Absolute conformity with the official regulations which will be issued shortly will be, therefore, of vital importance.

We have reason to believe that some excellent works are in progress for the exhibition, and anticipate a better display of photographs than has often been brought together. We trust that none will hold back their best efforts on this occasion.

SOLAR CAMERA ENLARGEMENTS.

We have been favoured recently with some examples of American solar camera work, kindly forwarded to us by our friend Mr. E. L. Wilson, of Philadelphia. They have been pronounced by all who have seen them the finest enlarged pictures they have ever seen. On asking our friend Dr. Vogel what feature of American photography had struck him most, he replied, "The solar camera enlargements." We have seen exceedingly fine enlargements produced in this country. Mr. Mayall's untouched portraits printed out on albuminized paper are admirably perfect. Some examples produced by Mr. Stuart, of Glasgow, also printed out on albuminized paper, seemed to leave nothing to desire; and it would be difficult, perhaps, to say that the specimens before us surpass these examples of perfection in enlargement. But we may affirm that these from America very far surpass the ordinary examples of enlargement we meet with, and one of them is, perhaps, the most charming enlarged picture we have seen.

They are the work of Mr. Albert Moore, of Philadelphia, who devotes himself especially to this kind of work, and keeps not less than eighteen solar cameras at work in fine weather. The special feature of his work is that, except in case of necessity, he does not develop, but always prints out; and to this fact is probably due much of the excellence of his work. The instrument used by Mr. Moore is described as that of Roettger, and is very similar to that figured in our Seventh Volume as the invention of Mr Stuart, of Glasgow, in which no reflector is used, the condensor being presented direct to the sun, an arrangement existing, of course, to permit the gradual turning of the instrument, so as to keep the light steadily on the lens. The printing formula used for plain paper is worthy of note, the salting solution only containing two and a half grains of chloride of ammonium to the ounce of water. The silver bath for this paper, and also for albuminized paper, never exceeds forty grains to the ounce, and in hot weather is reduced to twenty grains; the floating for albuminized paper not exceeding forty-five seconds, and for the plain paper twenty seconds. Fuming is here, as in most American formulæ, a necessary condition. The great excellence of the prints gives to these modified points of formula and manipulation considerable interest, inasmuch as they will doubtless be equally available in contact as in camera printing.

Solar camera printing without development is a very limited possibility in this country, on account of the uncertainty of sunlight. Nevertheless, in such summers as that just past, we have had a fair proportion of sunny days sufficient to have done much good work if the arrangements had existed. Some good work has doubtless been done, and we should be glad to see examples of it at the forthcoming exhibition. But we apprehend that the amount of such work done in this country can bear but a small proportion of that done in the States. How many such establishments there are in America we do not know; but we understand that Mr. Moore's eighteen cameras are in fine weather fully kept going for "the trade." The price charged by Mr. Moore for a whole sheet enlargement is two dollars and a half, equivalent to half a guinea sterling.

The examples forwarded to us consist of both heads and landscapes. The negatives of the latter, which are very fine indeed, were taken by Mr. J. C. Browne, of Philadelphia, a gentleman whose name is known to our readers. The best of the heads is that of a charming little girl, the negative of which won the prize of a gold medal, offered by Mr. Moore for the best solar negative. We hope to show some of the examples at the forthcoming exhibition, when many of our readers will have an opportunity of seeing them, and forming their own opinion of their excellence.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

Photography and the War—French Patents in Alsace—Art Studies and Indecent Photographs—The Halfpenny Postal Cards and Photography—Moonlight Photographs—Dress at the November Exhibition—Societies.

It has already been stated, I believe, that photography has been specifically enlisted in the service of the German army during this terrible war, a very complete photographic staff and equipment being in attendance upon the Crown Prince; maps, plans, and elevations being rapidly produced and multiplied for use amongst the officers of the troops now overrunning France. *En revanche,* war is doing much to ruin photography and photographers. You have mentioned the already felt scarcity of photographic paper and other French photographic goods; and you have alluded to the presence in London of such exiles as MM. Adam-Salomon and Reutlinger. Many more might have been named, and worse evils than exile. I understand that the large and complete establishment of MM. Goupil, at Asnieres, only recently built, and fitted up most completely for working the Woodbury process, is levelled with the ground; and similar rumours exist as to the partial injury or destruction of the establishment of M. Braun, at Dornach.

Referring to the latter, a curious speculation arises as to the future. M. Braun, being a French citizen, and living in a French town, has paid heavy sums of money for French patent rights. In case of the partition of France, and the absorption of Alsace by Germany, Dornach will become a part of Prussia, where no patent for either of the processes in question exists. In Prussia M. Braun would have no protection in working the various processes of which he has bought patent rights, as they are there open to the whole nation. Into France his productions could not be admitted, because, having been manufactured in Prussia, they would contravene the French patent law. Thus, it would seem, M. Braun must inevitably sacrifice large sums of money paid for such rights. This is one of the minor illustrations of the difficulties involved in annexation of people and territory, and suggests that such things will not be likely to decrease the notorious unwillingness of the people whose consent will not be asked to their transfer of allegiance.

The case of Henry Evans, who has now been in prison six months under a conviction secured by the Society for the Suppression of Vice, has been receiving some notice in the daily press lately. His wife, in a recent letter, repeats an affirmation which has been made before, to the effect that her husband is suffering for the sale of artist's studies, and not for vending prints of an obscene or immoral tendency. Mr. J. R. Lamprey, of the Ethnological Society, writes to the *Standard* to express his regret that a few studies from the life made to illustrate his method of measuring the human form, for the use of artists and ethnologists, should have brought Evans into such a strait. He adds:—

> These studies had been submitted to the Ethnological Society, and, having gained the approval of the Society, steps were at once taken to secure its general application. It never occurred to me that in asking Mr. Evans to put these works in circulation I was contributing to jeopardise his freedom, or that I should become, in degree, the innocent cause of so much suffering and misery to a respectable family, and I hasten to seize the opportunity thus afforded me to declare my opinion—based on a long acquaintance and intimate knowledge of his enormous and ever-varying stock of art studies—that I believe him to have been incapable of pandering to human vice, or having any such filthy productions in his possession as would be deemed worthy of a place in Mr. Collette's private album.

Mr. Collette, the Secretary of the Society, writes to the same journal

> To assure Mr. Lamprey that not one single photograph, the subject of the prosecution in question, came within the definition or description of "artistic studies." The proceedings of the Society were founded on photographs of the grossest obscenity, purchased of the prisoner, and others subsequently seized on his premises by the police. In addition to the facts already stated in my last letter, let me add that the solicitor employed by the prisoner, acting on instructions, set up the pretence now advanced, but withdrew the plea on the production of the photographs themselves; and permit me to add that this plea of the photographs being "artistic studies" was not attempted to be raised on the trial at the sessions, and the jury, without hesitation, returned a verdict of Guilty. Mr. Evans's patrons are, perhaps, not aware that included in the seizure by the police was a very large quantity of pirated copyright prints, &c., the property of Messrs. Graves and Mr. Vincent Brooks, and the prisoner was then fined £70 on a former conviction for selling pirated drawings; but proceedings were not instituted in the present case in consequence of the prosecution of the Society. The fact that Henry Evans dealt in works of art may have misled his numerous patrons who have signed his petition.

An "Art Student"—the same, I presume, whose letter on this subject appeared in your pages at the time of the trial—further writes:—

> I think that in prosecuting Henry Evans, the "Society for the Suppression of Vice" has overstepped the bounds of its vocation, and closed a shop that was of very great service to art students. I have seen Evans's stock, and purchased nude studies from him, but I did not see a single print that could be called indecent (in the Holywell Street sense of the term); indelicate they necessarily were, and would probably be considered indecent by Mr. Collette, and even by the late learned judge who tried the case, but that is inseparable from all photographs taken from the nude. That they were at all calculated to satisfy the morbid cravings of the patrons of Holywell Street I deny, and they would have no more effect upon a student accustomed to study from the nude than certain anatomical drawings would have upon a medical student.

I think it is perfectly evident, from these extracts, either that through the over zeal of a Society or its agents, and the imperfect judgment of the authorities, an innocent man is suffering imprisonment; or that his friends are guilty of decided misrepresentation, if not gross untruth. Which of these positions is the true one it is impossible to say; but one or two facts appear tolerably clear. It is certain that it is a dangerous thing for photographers to dabble in the production and sale of studies from the nude, even for legitimate art purposes, because very innocent studies of the naked human form may appear to prurient minds very naughty indeed. The question whether such things are artistic or obscene must, in many cases, be a matter of opinion; and it is a serious thing to risk imprisonment on a matter of opinion. The Society for the Suppression of Vice is, I believe, a very worthy society, but it is well-known that there is a tendency in such societies to justify their *raison d'etre* by making great effort to secure convictions. If, however, the friends of Mr. Evans wish to secure public sympathy as one form of pressure in obtaining his liberation, they should publish a list of the subjects seized and regarded as having an immoral tendency. If they were simply art studies, there can be no violation of decency in describing them. If they were the obscene productions to which Mr. Collette refers, no description of them can find publicity; but a mere assertion of the innocent character of the prints scarcely carries sufficient weight against Mr. Collette's emphatic statement of their indecency, and against the fact that a jury found a verdict of guilty.

The halfpenny post cards which have just come into operation have excited many apprehensions as to the consequences of their possible misuse. It has been suggested that they may be made productive of much annoyance if mischievous persons send upon them offensive or indecent messages, photographs, &c., the open publicity of the contents constituting the gravamen of the offence. That the cards may be misused, and possibly become very mischievous, there can be no doubt; but they cannot be made the means of conveying photographs, indecent or otherwise, as anything mounted upon the card is a contravention of the law regarding these cards, and it will, in such case, be charged postage on delivery.

In my last "Echoes" I indulged in a few theoretical speculations, the express aim of which was to show the *difficulties* of producing photographs by moonlight. One of your correspondents, who takes me to task, seems to think that my aim was to show the *impossibility* of the task. Let me assure him that it was nothing of the kind. I quoted an authority, which I had not verified, to the effect that the light or illuminating power of the moon was thirty thousand times less than that of the sun; but, assuming this to be true, it affords no evidence that the actinic power would be in the same proportion. On the contrary, from the colour and appearance, one would naturally conclude that moonlight was relatively more actinic than sunlight. After all, it would be much easier, and more to the purpose, to try what could be done, than to discuss the possibility. Another correspondent seems to doubt whether the moon at eleven o'clock at night would not be too high in the heavens to be comprehended, together with foreground, by the angle of an ordinary lens. More than one of my friends have also assured me that by the time mentioned, the moon would have risen to an altitude above the horizon quite beyond the range of any lens securing foreground at the same time. On this point I remember the example of astute Nick Bottom the Weaver, when Snout the Tinker asked, "Doth the moon shine that night we play our play?" Bully Bottom at once exclaims—

> "A calendar, a calendar! look in the almanac: find out moonshine, find out moonshine!"

Accordingly, I consult my almanac, and find that during the months of June and July, when I presume these pictures must have been taken, that during the few nights after full moon, when the moon would be still sufficiently near the full for the purpose, it rose in the first month at times varying from 9·23 P.M. to 10·59 P.M., and in July, at 8·53, to 10·43 P.M., so that no impossibility is involved in the moon's position. After all, however, whilst it is very interesting to test these possibilities, I am disposed to agree with those who, ask is the game worth the candle, unless really fine pictorial results can be obtained? How far Mr. Robinson's "First Hour of Night" is a genuine moonlight effect, and how far a good pictorial result, photographers will have an opportunity of judging, I presume, at the exhibition next month.

Speaking of the exhibition, I am reminded of a trouble in a small way which has existed for two or three years at the soiree with which the exhibition has been opened. In the first announcement of what was called an "exhibition meeting," it was intimated that it form a kind of *undress* soiree, the formality of evening dress being dispensed with. At that time, and at each of the opening meetings since, the majority of the visitors have come in ordinary walking costume, but some few have come in evening dress. This incongruity is, I feel sure, often productive of some miscomfort. Ladies who have come in morning attire feel at a disadvantage when in contact with others in all the glory of what is, too often ironically, called full dress; whilst gentlemen who have come in the swallow tail and regulation white choker are ill at ease in the company of others in ordinary walking dress. Would it not be well for the Society to append to the cards or circulars of invitation some intimation of what is expected?

The winter session of the various societies is at hand. In another month it is probable their papers and discussions will afford fresh subjects of interest to the photographic world.

PHOTOGRAPHY AND WOOD ENGRAVING.

BY ADOLF BEYERSDORFF.*

A wood block ready finished for the draughtsman is, in the first instance, carefully rubbed over, either by hand or a camel's hair brush, with powdered white lead mixed with a little water, but without any admixture of gum or other binding material. Caution must be exercised that, while any great exertion is avoided, the white pigment is well brushed into the pores of the wood. As the white paste contains no other liquid than water, the superfluous material is subsequently easily removable, leaving sufficient to cover the markings (or so-called year rings) on the surface of the wood. Only the least possible quantity of water should be employed in making the paste, as the moisture is apt to strain and warp the wood; and, for the same reason, it is well to pass a moist sponge over the back of the block to counteract any tendency of this kind, placing the wood on end for drying.

To protect as much as possible the fine surface of the wood, and prevent the water from being absorbed, I coat the block with a mixture of benzole, gutta-percha, and gum mastic, using, for the purpose, a soft brush. This mixture is made up in the following proportions; viz.:—

Benzole	100 parts
Gum mastic...	1 part
Gutta-percha	1 part

By the application of this solution the white-lead is fixed permanently upon the surface. As soon as the benzole has evaporated, the block is coated with an albumen mixture prepared in this manner:—Some white of egg is beaten to snow, and then allowed to settle down; of this one hundred parts are taken, and therein mixed one part of chloride of sodium and half an ounce of ammonia for every twelve ounces of albumen. The latter must not be made use of at once, but requires keeping for four or five weeks until entirely decomposed, a change which may be the more rapidly ensured by placing the mixture in a warm locality or covered up in the sun. Any loss of moisture by evaporation may afterwards be made good by adding the required amount of water. The longer the albumen is kept the more suitable it becomes for the purpose, only it is necessary that filtration should take place before employment is made of it; and, moreover, it is desirable not to preserve the liquid in the laboratory or studio, as the strong odour emanating therefrom can, under no circumstances, be mistaken for that of eau de Cologne.

After being albuminized, the block is sensitized in an ordinary silver bath, remaining in the solution for the space of one or two minutes. To render this operation a convenient one, I place in the porcelain dish, which serves to hold the solution, a strip of glass upon which the block may rest, and the surface thus prevented from coming into contact with the bottom of the dish. When the operation is completed and the wood perfectly dry, it is placed, like any ordinary albuminized surface, in a printing-frame provided with strong springs or pressure-screws, and exposed to light under a negative in the usual manner. The print is subsequently freed from any superfluous silver by washing over with a soft brush, toned in an ordinary gold bath, fixed, and again well washed.

As a matter of course, the negative used must be reversed, and the following is a simple means of transferring the film:—

After the negative has been fixed, washed, and dried, it is not varnished, but poured over with a chloroform-gutta-percha compound thus made up:—

Gutta-percha	1 part
Chloroform	50 parts

and, as soon as the chloroform has evaporated, a coating of normal collodion is applied upon the gutta-percha film. When this last coating of collodion has set (but while yet moist) the negative is placed in a water bath, in which it is allowed to remain until the image leaves the glass of its own accord. The film is then reversed, and again caught up upon the same glass, care being taken that no air-bubbles are produced between the two surfaces, their formation being prevented by smoothing down the image with a soft brush.

This method of preparing blocks for the wood engraver has been practised by me on many occasions, and possesses the advantage of involving the use of silver instead of bichromate salts. The silver does not penetrate deeply into the wood, and this engravers hold to be an important consideration.

ENLARGEMENTS ON COLLODION FILMS.

BY PROF. J. TOWLER, M.D.*

Another correspondent puts this question: "Is it possible to prepare an eight by ten negative, enlarged from a quarter-plate negative, as sharp as a negative taken directly of this size by means of an appropriate lens?"

My answer is this: It is barely possible; but from the difficulties just mentioned you see the precautions to be taken, and if these are not taken, the task is not possible. Supposing there is just a mere breath of air when both the negatives were taken—that is, the quarter-plate for the solar camera, and the eight by ten for direct contact printing—this breath of air instituting a slight quiver in both cameras, which makes itself manifest in the two negatives to an equal extent, although quite trifling in both cases. Now, when the quarter-plate is magnified some ten or twelve times, this self-same error is magnified ten or twelve times, and hence the two negatives are vastly different.

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* Photographische Correspondenz.

* Continued from p. 475.

In the photographic studio we do not have to contend with the wind; notwithstanding this, every precaution already alluded to must be taken, in order to meet with success. There is a refinement in this department far ahead of anything in the common everyday occupation of taking negatives, and the result of this refinement is success.

Following out the suggested plan, then, we must first take a good negative—a portrait, for instance. If it is troubled with a single pinhole on the face, take another and another, until you are perfectly satisfied. It is seldom the case that such a negative is sharp everywhere, and probably there are freckles or pock-marks to be removed. You proceed, therefore, to the retouching frame, or hand the negative to the retouching artist, whose duty it becomes to fill up the unsightly cavities. This done, the next operation is to copy the negative into a transparent positive. I need scarcely remark, that you will not succeed in getting a good copy unless everything about the camera is accurately in order, and distances coincident, and you focus with extreme sharpness. Having succeeded in obtaining a correct and sharp copy, you are in a condition to discern where certain lines may be rendered more distinct, certain shadows more determined, and certain parts—as the back hair, or drapery—may be brought, as it were, into focus. Your artist can do all this, both on the negative and the positive, with a good blacklead pencil, the films having been previously varnished and rubbed with very fine pumice-powder, as indicated in a previous article. At this stage your transparent positive ought to be as nearly perfect as possible; for it can be made so with proper care and perseverance, and with proper artistic taste and skill in the manipulations.

Even the negative of a landscape may frequently admit of similar treatment and improvement; but I must urgently advise every one who intends to experiment in this direction, or to make a practice of solar enlargements, to exclude almost all extraneous objects, and to make one object his principal object, and, as before recommended, to take the view with a long-focussed lens at a long distance. In this case very little retouching will be needed; and this mode of proceeding is the secret of success.

Having in this way secured satisfactory transparent positives, they become, as it were, your stereotype plates, from which you are enabled to prepare as many negatives, and of whatever size you may desire, and all of them of equal intensity. Every operation is under your control. Some may object that it is impossible to obtain copies equal to the original. The objection has no weight; it is simply asserting that you cannot get a print equal in sharpness and detail to the negative, which is absurd. Of course, extreme care is absolutely required in all the operations.

You are now supposed to be provided with corrected negatives of the same size as the original, as also of larger dimensions for contact printing. The smaller negatives are of two kinds: the one intense and thick, for contact printing; and the other thin and more transparent, for copying or printing in the camera. The latter now claims our attention.

Transferring of Collodion Films to Paper.—The glass intended to receive the transparent positive—which is afterwards to be transferred to paper—is previously well cleaned, and then rubbed over with a little white wax dissolved in ether, after which the surface is again polished with a clean silk cloth. I use an ammonio-cadmium collodion—one that is perfectly colourless—for this purpose, consisting either of iodide of cadmium and bromide of ammonium, or of bromide of cadmium and iodide of ammonium. The pyroxyline has been previously washed in ammoniacal water, washed and dried, and the ether and alcohol redistilled from lime. In this way you cannot fail to get a colourless collodion, if it is allowed to stand a day or two in a dark room. With this collodion a positive is obtained of any required size in the copying camera. Give abundance of exposure, and when, by development, all detail is quite apparent, wash and fix the picture; whilst the latter is still wet, tone it, first, for a moment or so, with a dilute solution of chloride of gold, afterwards with a solution of bichloride of mercury for a very short time; this proceeding will render the film sufficiently black; wash the print, and then dry it.

Paper to receive the collodion film is naturally plain paper previously washed over with a solution of gelatine, ten grains to the ounce, or it is floated on such a solution, and then dried. Cut out a piece of this paper of the required size, and let it float, gelatine side uppermost, on a dish of clean water, until it lies quite flat on the water; now draw once through the water quickly, and let it drain. The paper is now bent, gelatine surface downwards, and lowered upon the collodion film, so that the middle part comes in contact with the film first, after which each side is lowered gradually. The intention is to get contact between the films without any bubbles, which are to be removed in every case before pressure is applied. Finally, place over the paper a few thicknesses of blotting-paper, then a flat board, and over this a quantity of weights; as soon as the paper becomes thoroughly dry, you proceed round the edge of the paper with a sharp penknife, and cut through the collodion film, and afterwards raise one end of the paper. It is now easy to raise the whole piece gradually; and, as you will observe, the picture is on the paper, and a brilliant picture it is.

N B.—In order to preserve the picture in its natural position—that is, without lateral inversion—the negative is placed, whilst copying, with its film towards the light.

MANIPULATIONS IN THE DARK ROOM.

BY ELBERT ANDERSON.

We continue our extracts from Mr. Anderson's dialogue instructions in our Philadelphia contemporary. On this occasion he discourses on reactions and manipulations in the dark room, commencing by explaining the reactions in the bath as follows:—

A. Whilst speaking of iodizing the negative bath at our last meeting, you will remember I said that if a solution of any iodide (such as iodide of ammonium, cadmium, potassium, &c., in water) be poured into a solution of nitrate of silver, a dense yellowish precipitate is thrown down, which is iodide of silver. The iodide of silver thus formed is done by what is called in chemistry double decomposition. The iodide, formerly combined with the ammonium, leaves it and combines with the silver, whilst the oxygen and nitric acid leave the silver and combine with the ammonium, forming nitrate of ammonia.

M. When a plate is coated, then, the iodides and bromides, uniting with the silver in the bath, form iodide and bromide of silver; but what becomes of nitrate formed?

A. When the iodide and bromide of silver is formed, it is restrained from getting into the bath by the nature of the collodion, which holds it fast to the glass; a portion of the nitrates thus formed remains in the bath, and may be in it in considerable quantity without materially affecting the working properties of the bath.

M. There are methods, however, I presume, whereby this nitrate can be entirely removed, are there not? Fusing the bath, for instance?

A. Assuredly all the nitrate can be easily removed; not by fusing, however. We will come to all that in good time. I remember, after I had been coating some thousands of plates, as assistant in the dark-room, the operator happened to mention one day, in a casual manner, "Anderson, you don't know anything more about coating a plate than a double-headed jackass." Though forcible, this was perhaps inelegant, and, upon the whole, not encouraging, though the precise nature of the bicephalus animal was not apparent, the Siamese twins being the nearest that—— Well, that's neither here nor there. I mention this little incident as a gentle hint to you. To flow a plate properly can only be done by very great practice.

M. Ah bah! I coated plates after one or two trials as easily as sliding down a cellar door.

A. I will not dispute you; you no doubt coat your plates as hundreds of others do, that I have seen do it. If it suit you, and them, all right; it is your business, not mine; but this style of coating will never suit me. I repeat, to coat a plate properly—*i.e.*, without comet lines, cloud waves, and evenly, without the slightest imperfection—requires care and dexterity. The directions by the "great ones"—"pouring a pool in the centre of the plate, and tilting it until it covers all the plate, then rocking it, to make the lines coalesce"—are followed by many, and no doubt they are perfectly correct. I do not do it, however. I like my own way best. Like most tricks of sleight-of-hand, this is exceedingly difficult to explain in writing. As the playbills have it, "it must be seen to be fully appreciated." Hardwich says, on page 416, 7th edition, "Apply the whole quantity of collodion first, and incline the plate afterwards; but never tilt and pour at the same time. Do not be penurious as regards quantity, and if a little should flow away at the edges it will be of no consequence." Very emphatically for me, I cannot agree with this gentleman, as I differ from him in every particular. Consider the plate coated. In a few moments the ether in the film will have sufficiently evaporated, and the plate may be touched slightly with the ball of the third finger, at that corner whence the collodion was poured off. The finger should leave its impression, without otherwise affecting the film, which latter is now said to be set. Now I quote: "When the collodion has become a little tacky, the plate is ready for immersion in the silver bath. Place it on the dip-rod and let it down with a quick motion, but not so rapid as to cause a splash."—*Dawson's Practice*, page 12.

"When the plate is ready, rest it upon the glass dipper, collodion side uppermost [I am very glad indeed he mentions this, as it is so exceedingly handy and perfectly natural for any one to coat a plate and turn it buttered side down, to lower it in the bath]—and lower it in the solution by a slow and steady movement."—*Hardwich*, p. 417, 7th edition.

M. Now, but which is right?

A. You pays your money and takes your choice, my little man.

M. You can at least give me your opinion.

A. Follow Hardwich's advice. Lower your plate very slowly and steadily, and the moment it is entirely submerged, swing the dip-rod very gently from right to left, and up and down two or three times.

M. Is your dip-rod too short, that you put this peg at the handle?

A. I cut the rod off expressly that the plate shall not reach the bottom of the bath by two or three inches; consequently all fragments of collodion, film and other particles of matter floating in the bath, instead of lodging on the plate, sink below it, and greater cleanliness is ensured. You will now understand that the iodide and bromide of the collodion, coming in contact with the nitrate of silver in the bath, form (as previously stated) iodide and bromide of silver in and on the collodion film.

M. The plate must remain in the bath until it is perfectly smooth, and shows no greasy lines, I know; but what makes those lines?

A. Although water and alcohol mix perfectly together, such is not the case with ether. The water in the bath repels the ether in the film, and until the ether is washed away it will run down the plate precisely as if the plate were dipped in oil or grease.

M. What is the object of moving the plate about in the bath?

A. It greatly facilitates this very washing off of the ether, and consequently expedites the "sensitizing" of the plate. You will find it an excellent plan, after the plate has been in the bath a few moments, not only to move it about up and down and sideways, but to raise it entirely out of the solution eight or ten times; it will sensitize in just one-half the time. There is no harm in leaving it quiet in the bath if you are otherwise engaged (in posing, focussing, &c.), only it takes rather longer, for the reason already given. Now let us make an experiment. Take one ounce of protosulphate of iron, C. P. (crystals of green vitriol), and crush it up in a porcelain mortar to powder, adding water at the same time, which dissolves the iron gradually; pour off this water in a bottle and add more, until the whole of the iron is dissolved. Finally add water until the bulk is equal to sixteen to twenty ounces of water to the one ounce of iron. When thoroughly mixed, filter it through filtering-paper.

M. This is the developer, I suppose?

A. That is its photographic name, but used as it is in photographic operations, it is called in chemistry a reducer.

M. Why?

A. You will see presently. Take about a drachm of your silver solution in a saucer, and pour into this a drachm of the iron solution; observe the effect.

M. It has turned to a leaden colour, somewhat like indelible ink, and has a silvered surface.

A. The solution of iron being mixed with the silver solution causes the silver to precipitate—in other words, reduces the silver to the metallic state.

M. What is the cause of this precipitation?

A. Ah! now listen to me. The term molecular force is used to express certain manifestations of actions, or attraction, the principal ones being attraction of cohesion, of adhesion, capillary attraction, and affinity. Now, although they essentially differ from each other, these forces all agree in one remarkable particular; to wit, their influence upon matter is exerted only at insensible distances.

M. What are these essential differences?

A. Cohesion, or cohesive attraction, is that force which holds together atoms of the same kind of matter. The effort required to break a substance is a measure of the strength of the cohesive force exerted by its particles, and when this attraction between its particles is once destroyed (remember this word), it is generally impossible to restore it. Thus, that force which binds together all the parts to form a lump of sugar is cohesion, and the atoms are said to cohere. *Adhesion*, or adhesive attraction, is that force which causes unlike particles of matter to cling together, and when united, the atoms are said to adhere. Thus, when two pieces of wood are glued together, they are held by the adhesive force between the particles of wood and the particles of glue. Capillary attraction is that force which manifests itself between the surfaces of solids and liquids. You must have frequently noticed, in pouring water gradually from a cup or pitcher, how the liquid is disposed to cling to and run down the sides of the vessel.

M. Oh yes; and like your coffee when it is sucked up (like with a sponge) by a lump of sugar.

A. You are right.

M. Yes; but why is it called caterpillar attraction?

A. *Capillary* attraction (from the Latin *capillus* (hair), because it was first observed in small glass tubes the bore of which was not thicker than a hair. *Affinity* is that attraction which unites atoms of different substances into compounds possessing new and distinct properties.

M. I don't quite understand you.

A. Oxygen (a gas supporting combustion) and hydrogen (an inflammable gas) unite and form water (oxide of hydrogen), a liquid with the very opposite properties of the gases. Now, Mr. Marshall, I hope you will excuse this diversion from the main subject, but by first understanding this, I can far better explain what is to follow.

M. Thy words drop upon mine ears like unto music.

A. What kind—Japanese?

M. No more; don't let me interrupt you.

A. When a solid (a lump of sugar, for instance) dissolves in a liquid (say water), the cohesion between its particles is not destroyed, mind you; it is merely overcome by the superior force of adhesion between the particles of water and those of the sugar; for sugar, whether in a lump in the hand or dissolved in water, is still sugar. This is an example of plain solution; and in all cases of simple solution, the properties of both the solid and the liquid are retained. Now, there exists a clear distinction between a simple solution and a chemical combination, though the latter is often called a solution.

M. Can you give me an example?

A. When metallic silver is dissolved in nitric acid, the nitric acid, as previously stated, is decomposed, one portion oxidizing the silver whilst the second portion combines with this oxide, and thus produces the nitrate of the oxide of silver. Here, then, is a case of chemical combination; as, in the nitrate thus formed, neither the properties of metallic silver nor of nitric acid can be detected. Do you understand me? Again, when pure camphor is dissolved in alcohol, is this a case of chemical combination?

M. No, certainly not.

A. Why?

M. Because both the smell of the camphor, and the taste and other properties of the alcohol, remain.

A. Good boy; go up head. Now another experiment. Into this wineglass I pour a little water (say three-fourths full), upon top of which I pour some spirit of camphor. Observe the result.

M. The camphor is all restored again. This is, then, a case of precipitation.

A. Exactly. Now, Mr. Marshall, what made the camphor precipitate?

M. Ah! here she goes. Because the adhesion between the water and the alcohol is greater than the adhesion between the camphor and the alcohol, so that the alcohol deserted its first love and espoused the cause of the water; in fact, became a member of the temperance society.

A. Now, when the solution of protosulphate of iron is poured into the silver solution, the attraction between the iron and the water is stronger than that between the silver and the water, consequently the silver is set free and precipitated; but, as the precipitate is metallic silver, and not nitrate, it is said to be reduced. Let us now repeat the first experiment with a modification. Into the developer, as you call it, I will pour two ounces of acetic acid to one ounce of iron and eighteen ounces water; into a drachm of silver solution in the saucer I pour the same quantity of developer; observe the effect.

M. It don't precipitate any more; now what's up?

A. Acids have a retarding effect in this reduction, and if added in too large a quantity, the reduction is almost entirely checked. See, now the solution is turning black again, as in the first experiment. Lime is somewhat soluble in water, but if carbonic acid gas is brought in contact with it whilst in solution, the two will unite together by the action of the chemical force of affinity, and overcome the adhesion which the water previously had for the lime. The above case fully illustrates a general law in chemistry, which may be stated as follows:—Two substances which, when united, form an insoluble compound, generally combine and produce the same compound when they meet in solution. This law is practically taken advantage of, in chemical operations, for separating the different constituents of a compound from each other. Thus, if you desire to know if a certain perfectly clear spring water contains lime, you must introduce carbonic acid gas; this, uniting immediately with the lime, forms an insoluble compound, which is precipitated; and on the other hand, by reversing the operation and introducing a solution of lime, you may be able to detect the presence of carbonic acid gas.

M. Why does hot water dissolve substances more readily than cold water?

A. Anything which tends to weaken the force of cohesion in a solid of course favours solution. And if a substance be reduced to powder, it dissolves more quickly, both from the larger extent of surface which it exposes to the action of the liquid, and from the partial destruction of cohesion between the particles. Thus heat, by diminishing the force of cohesion, generally promotes solution.

M. Generally!—don't it always?

A. No; some substances dissolve more freely in cold water than in warm—lime, for instance. Iodide of silver dissolves more readily in a cold solution of silver than in a warm one. Alum, on the other hand, dissolves so freely in hot water, that it will resume in part its solid form as the water cools; thus many substances are dissolved in boiling water first, to bring on crystallization.

ON COPYING DAGUERREOTYPES.*

The days of Daguerreotypes, the earliest fruits of the camera, now lie so far behind us that a certain unfamiliarity with their nature marks the younger generation of photographers. As such productions share with photographs upon silver paper the certainty of gradual decay and dissolution, it is not seldom that one sees now-a-days Daguerreotypes retaining but very little of that clearness and distinctness which, twenty years ago, caused them to be looked upon with such wonder and amazement. But little trace of their original beauty is, indeed, in some cases, perceptible, a gradual dimming of the image being apparent, together with the development of a bluish or reddish-yellow film of metallic lustre, which slowly and surely covers up and destroys the cherished shadow. At other times, stains and spots are to be observed over the surface of the plate, and they, in the same manner, herald in the speedy destruction of the image. Indeed, so dilapidated and damaged are some of the portraits ofttimes submitted to photographers for copying or reviving, that now and then a sense of humour cannot but be awakened on their examination, frames containing apparently nothing but dirt and dust being occasionally handed over to be copied, with the comforting assurance that the portrait was, in its day, a wonderful likeness. In such a case there is, of course, no help; but often enough the pictures, although in a most deplorable state, are still in a condition that admits of retouching and improving to an extent admitting of their being copied and yielding results of some value.

Before proceeding to copy a Daguerreotype, the original must always, in the first instance, be carefully cleaned. The plate is taken from its frame or other enclosure, the image the while being handled with excessive care, as Daguerreotypes are quite as delicate to handle as unvarnished negatives. With the aid of a soft brush the surface is freed from any dust or loose particles of dirt, a very light hand being exercised, so that no injury is imparted to the plate. If there are any spots of a bronze, brown, or blue colour visible—which are generally most apparent where the card-board or cover has laid upon the surface of the picture—these can only be removed by chemical means.

One of the corners of the picture is firmly held by means of a pair of pincers, and the surface moistened with ordinary water, which is poured over until the stream runs regularly over the metal plate; after this, a solution of cyanide of potassium of average strength is carefully poured over in like manner, the operator allowing the same to act upon the silver surface, and narrowly watching its effect upon the image, so as to be able to arrest its action as soon as the spots and stains above mentioned have disappeared. When this is the case, the plate is again washed in the same manner as previously, ordinary spring water being used for the purpose in the first instance, and afterwards distilled water only, so that all trace of the cyanide solution may be removed as perfectly as possible. The plate is subsequently dried by warming it gently over the flame of a spirit-lamp.

In this manner I have treated many hundred Daguerreotype plates which have come under my hands to be revived, and in not one single instance did I meet with misfortune. On the contrary, however, I have not only been able in this way to secure copies of a much better description, but I have received on many occasions the thanks of my clients, who were delighted to receive back their pictures in a better condition than that in which I had received them. A friend of mine, nevertheless, once complained to me that in the treatment of the picture with cyanide of potassium the image became to some degree attacked and eaten away in such a manner that it was only by timely recourse to water, and thus by removing at once the cause of the catastrophe, that the image could be saved at all. Caution, therefore, is exceedingly necessary in the operation, especially when the plate itself is of some value, for it would appear to depend much upon the manner in which the Daguerreotypes have been prepared as to how far they are capable of withstanding the action of the cyanide solution, some being undoubtedly less liable to attack than others.

Good Daguerreotypes we see, therefore, offer no extraordinary difficulty in the way of being copied; the surface of the image is so exceedingly fine and polished that the pictures will bear considerable enlargement without showing grain, the copies, when printed upon albuminized paper, being nearly equal to reproductions from nature. It is only in large sized enlargements that the high lights exhibit a certain amount of roughness, which, however, is much less marked than the grain observable upon paper pictures, and may, moreover, be removed by slightly retouching the negative.

The matter is, however, different in the case of inferior or bad originals. Often the silvered copper-plates is damaged by being cleaned, and exhibits a number of fine parallel lines or scratches, which are observable upon the copy to a very marked and disagreeable degree; such defects cannot be obviated altogether, but may be softened down very much by using discretion in the manner of lighting. The Daguerreotype must, indeed, be so placed that the scratches run in a perpendicular direction up and down, and so lighted up that the defects are as little visible as possible. A mode of proceeding here occurs to me which was adopted by a brother photographer to avoid grain when copying albuminized pictures, and which proved, in truth, in some degree successful. In this case the camera and the support for the picture were fixed rigidly upon a stand moving perpendicularly upon a pivot, and when the exposure commenced, camera and picture were made to revolve smoothly and gently. As the grain is simply the result of a one-sided mode of lighting up the unevenness of the surface of the paper, it is, of course, apparent that in this way the defect may—at any rate, to a great extent—be avoided.

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* *Licht.*

In copying Daguerreotypes, much attention must be bestowed upon the mode of lighting, as such productions reflect, in the deep shadows represented by a brilliant surface, any objects which may be opposite to them, and in this way the copy is rendered imperfect in such portions; for this reason, many photographers prefer to copy Daguerreotypes in full sunlight, so that there is no chance of false reflections injuring the result. At the same time, there is no doubt that, with a little care, very good reproductions may be made in the studio.

LORENZ'S SULPHATE OF COPPER DEVELOPER.

BY FRITZ HAUCK.[*]

A new developer, described in a recent number of *Licht* by M. Lorenz, has been the subject of examination in my hands. This developer was said to be distinguished for the fine and dense nature of the film secured by its employment, thus rendering it particularly suitable for the manipulation of enlargements. It was prepared by mixing together two solutions thus composed:—

A.—Distilled water	20 ounces
Pyrogallic acid	70 grains
Formic acid	30 ,,
Alcohol	1 ounce

B.—A concentrated solution of copper vitriol in water (one part of vitriol to two or three parts of water).

The solutions were mixed before use in the proportion of three ounces of A to one of B, and poured over the plate in the ordinary manner.

My first experiments were made with a developer prepared with a chemically pure copper vitriol, under the impression that M. Lorenz had intended such material in describing his formula; but the solution I obtained did not by any means exercise those advantageous influences which I had been led to anticipate. The negatives treated with it were defective in density, and, moreover, did not exhibit proper gradation in the shadows. In my next trial, therefore, I employed ordinary commercial copper vitriol, and, with a solution prepared therewith, my results improved, although the same were not in any way equal to such as could be secured with an iron developer. Having thus found out that the ordinary copper vitriol was more successful in its employment than a chemically pure product, it appeared to me conclusive that the Lorenz developer owed its qualities not so much to the copper as to a certain quantity of iron, for, as we well know, ordinary copper vitriol invariably contains an admixture, to a more or less extent, of some iron salt or other. This conclusion was fully confirmed by further experiment; I added purposely small quantities of iron to the solution, and the richer the developer became in iron (up to a certain point) the more successful were the results obtained with it. The limit to which the addition may be made is four to five grains of iron to one drachm of pure copper vitriol, a further quantity of iron being inadmissible on account of the pyrogallic acid rendering the copper solution of a black and dirty nature when the two solutions come to be mixed.

Under certain circumstances, therefore, the Lorenz formula yields very good results, although I would scarcely recommend it as superior to the iron alone, for the copper solution does not certainly act more quickly and vigorously than a strong iron developer; moreover, the copper developing solution possesses the defect that any subsequent intensification of the negative is impossible without much care and attention is bestowed upon the treatment of the plate. If the Lorenz developer is not thoroughly washed from the plate with considerable attention, the pyrogallic acid intensifier at once gives rise to fogging of a brownish red nature, a defect I have already pointed out.

In conclusion, I would indicate to my readers a good method of detecting and estimating the amount of iron in copper vitriol, as a simple means of this kind is sometimes very welcome.

Half a drachm of the copper vitriol to be tested is placed in a flask, and over it is poured a small quantity of pure nitric acid, the whole being then raised to boiling point by means of a spirit lamp. When the sulphate of copper has completely dissolved, the liquid is allowed to become cool, and in this state salts of ammonia is added, drop by drop, until the bluish green turbidity at first produced is again dissolved away, and the liquid assumes a deep azure blue colour. The solution is now passed through a filter paper fitted in a funnel in the ordinary manner, and the precipitate thus collected will show whether the copper is to any extent mixed with iron. A yellowish brown powder, which may be at once identified, is found upon the filter after the liquid portion of the mixture has gone through, and the greater or less quantity of this finely divided precipitate shows the extent to which the copper is contaminated with iron.

ALLEGED PIRACY OF PHOTOGRAPHIC REPRODUCTIONS.

A somewhat novel charge of piracy was preferred on Thursday, at Worship Street Police Court. Hitherto the majority of such charges have had reference to photographic piracies of paintings and engravings. In this case the charge is one of pirating photographic copies of pictures for the copyright of which for photographic purposes only the complainant had paid heavy sums. The following is the report which appeared in the daily press:—

George William Knight, a photographer, of 36, Tabernacle Walk, Finsbury Square, was charged before Mr. Newton with having unlawfully sold copies of certain pictures the photographic copyrights of which were vested in another person.

Mr. George Lewis, jun. (Lewis and Lewis) appeared in support of the prosecution; Mr. Chipperfield, solicitor, was for the defendant.

Mr. Lewis said that the defendant was charged with pirating or selling pirated copies of five pictures, called respectively, "Grace Darling," "Obedient to the Law," "Erin, Farewell," "The Reaper," and "Tribulation." The proceedings, he added, were taken under the act passed for "suppressing the commission of fraud in the production and sale of works of fine art."

Mr. Benjamin Brooks, fine art publisher, of High Street, Oxford, and 17, Great Portland Street, Regent Street, the complainant, was then called, and he deposed that he was the owner and copyright holder of the original painting of "Grace Darling." He also held, by purchase from Mr. Ernest Gambart, the exclusive right to publish and sell photographic copies of the pictures, "Patient in Tribulation," "The Reaper," "Obedient to the Law," and was owner of the original oil painting by Mr. Faod, R.A., "Erin, Farewell."

The copyright and deeds of registration of the above pictures, made out as held by the complainant, were put in as evidence.

Mr. Brooks added that he still remained the owner of those pictures and copyrights, and had never heard that they had been claimed by anyone else. He had never given the defendant permission to copy or sell photographic copies of those pictures. He had been at great expense to obtain the copyrights, and in the course of his business had paid £40,000 for copyrights of pictures. but his trade was being ruined by the practice pursued by such men as the defendant. Witness had cautioned him a short time ago against the system he was pursuing. Witness had seen the photographs purchased at defendant's shop, and they were pirated copies of those issued and sold by him. The edges, top, and bottom, of each photograph had been rounded off, so as to cut away the photograph of witness's name, which all those issued and sold by him bore.

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[*] *Licht.*

In the course of a lengthy cross-examination by Mr. Chipperfield, complainant said that he had paid 300 guineas for three of the pictures to Mr. Gambart, and two of them he had had the day after they left Mr. Faed's studio. He was positive that Mr. Gambart had not sold the right to photograph them to any one else.

William Coke, assistant to the prosecutor, proved going to the defendant's shop, after seeing a photograph of "The Reaper" exhibited for sale in the window, and giving an order for photographs of certain pictures, among which were those enumerated above. Defendant said that he had not got them in stock, but was going to print some off from the engravings. At a later visit witness purchased the copies produced in court.

For the defence, Mr. Chipperfield said he should prove that the copies produced were some of those issued by the prosecutor, and that the name had been cut off in defendant's shop.

William Oliver, assistant to the defendant, being called, deposed to seeing the names cut off the photographs by a person who was in court.

John Cunnington, a photographer, of Forest Hill, said he cut the name and address of the complainant off each of the photographic copies produced. They were the publication of Mr. Brooks.

In cross-examination by Mr. Lewis, the witness said that for the past two years he had been in the habit of attending upon the hearing of all cases where persons were charged with pirating. He had never printed any of Mr. Graves' copyrights. He purchased the copies produced on behalf of the defendant. He declined to say where he got them, but it was at a retail shop. He bought them in St. Paul's Churchyard. Did not know if the man he bought them of had been convicted. His motive for cutting off the complainant's name was, that he beleived it to be a trap laid by Mr. Brooks to catch the defendant. The pieces he had cut off he produced. The summonses proved that he was right in his conjecture that it was a trap of Mr. Brooks'.

Mr. Newton said he thought not. If the witness had no other motive in cutting the name off, he had laid a trap into which his friend, the defendant, had fallen. The evidence for the defence, however, did not satisfy him, and no explanation had been given of the defendant's remark to the witness Coke—that he had the engravings, and was going to print photographs from them. He considered the case proved, and the defendant's conduct disgraceful. Cunnington also had very nearly laid himself open to a charge of conspiracy with the defendant, and he advised him to take great care what he was doing, or he might very shortly find himself placed in a similar position to the defendant, who, he considered, had in a measure been led away by Cunnington. He ordered the defendant to pay a fine of £5 on each of the five summonses, or be imprisoned for two months in each default—in all, £25, or ten months' imprisonment.

The defendant was removed in custody of the gaoler.

After Mr. Lewis had left the court,

Mr. Chipperfield applied that his client might be released on bail, so as to lodge an appeal.

Mr. Newton refused to admit defendant to bail, reminding Mr. Chipperfield that Mr. Lewis had said that if set at liberty after judgment there would be nothing more seen of him.

Subsequently the fines were paid.

Correspondence.

PHOTOGRAPHY AT KEW OBSERVATORY.

Sir,—Having seen in your journal of the 30th ult. a paragraph entitled "Photography at the Kew Observatory," I should like, with your permission, to offer a few remarks on the same.

In the first place, I beg to be allowed to state that the photographic records derived from the self-recording magnetographs, which are obtained on sheets of paper twenty inches by six inches, differ from the negatives of the sun obtained in the photo-heliograph by a collodion process.

The process employed in preparing the sheets for the self-recording instruments is an adaptation of the waxed paper process, rendered necessary by the conditions under which the instruments are worked.

In the first place, great constancy of working is required; secondly, the production of an intense black line by a very small pencil of rays of ordinary gas light (a dot of light); thirdly, that the paper should remain unaltered in sensitiveness during several days whilst undergoing exposure in the instrument; and, finally, that it should be easy to work, and inexpensive.

Many experiments were made by Mr. Crookes at the Radcliffe Observatory, Oxford, before this process was decided upon, but none of the various ones tried was found sufficiently good for the *exact* requirements of science, and most of them were expensive.

As to the permanency of the curves, I may state that those taken off the instruments thirteen years ago appear now as good as those developed this morning; but, as it is impossible to say how long they will remain so, Dr. Stewart suggested, in the paper quoted, tracing as the least expensive manner of getting tolerably good permanent copies; and I very much question if any photographer could be found who would give us carbon prints, a single one each, from 13,140 paper negatives twenty by six inches, for £100, "the sum at present available" for the purpose of obtaining the requisite duplicates.—Yours, &c., G. M. Whipple, Magnetic Assistant.

Kew Observatory, October 8th, 1870.

[The photographic system pursued in working the self-recording magnetographs at Kew is, we believe, similar to that at Greenwich, which we have described in these pages. We have pleasure in bearing testimony to the excellence, and to also, from what we have heard of the skill and competency with which it is worked. The process to which we referred as being behind in date and efficiency to the commercial photography of the day is the wet collodion process with iodized collodion and pyrogallic acid developer employed in working the photo-heliograph. Regarding the amount to be expended in obtaining permanent impressions of the photographic traces of the magnetograph, we, of course, knew nothing. We admit the difficulty of obtaining single impressions from 13,140 negatives twenty inches by six inches at less than twopence each, and must confess that we should scarcely have expected it possible to secure hand-tracings for such a sum. If a carbon process were employed, the very simplest, without any transfer, would, we apprehend, be sufficient. A thinly coated sensitive tissue, developed without transfer, would answer every purpose.—Ed.]

PRELIMINARY COATINGS.—RETOUCHING VARNISH.

Sir,—Some weeks since I saw several comments on the components of Tunicare and other kindred preparations, and as opinions seem to vary, allow me a small corner to give my mode of procedure.

Thoroughly beat up with a wooden or silver fork the white of one hen's egg with the following solution:—

Distilled water	2 ounces
Spirits of wine	1 ounce
Glacial acetic acid (previously mixed)	3 drops

Bring the whole to a good froth; set it aside for the night; next day filter it into a clean six-ounce bottle, and fill up with filtered distilled water three ounces. Those who require a good varnish for retouching, I can strongly recommend to use Fry's ordinary negative varnish, applied as usual, but not warmed in drying, which causes it to chill or dry with a dead surface, which, when dry, affords an excellent tooth for working on with an ordinary BB pencil; when sufficiently worked, it may be again revarnished with the same varnish, applied with heat, which I find gives a harder surface than any other varnish in the market which I have tried.—I am, sir, yours, &c.,

Nemo Nomad.

PHOTOGRAPHY AT THE BRITISH ASSOCIATION.

Sir,—On reading the report in your journal of the meeting on the 27th ult. of the Liverpool Amateur Photographic Association, I notice that allusion was made by a distinguished member to the entire absence of matter of photographic interest from the sectional proceedings of the British Association, and, further, that it was proposed to put on record the Society's regret that scientific men did not take more interest in photography.

Whilst perfectly agreeing with the speaker, Mr. O. R. Green, as to the fact, and sharing his regret, I cannot but think that the Liverpool Society is partly answerable for the non-fulfilment of these expectations. The programme of the British Association is confessedly based upon the principle of interchange of ideas between metropolitans and provincials, and, whilst it is undoubtedly part of the duty of the staff of the Association to provide matter for discussion, it is equally incumbent upon the local members and associates to bring their quota to the general contribution.

In one shape, it is true, they have done so on the present occasion, for the soiree held in St. George's Hall was a splendid success, and depended largely for its interest upon works exhibited and individual efforts made by photographers the majority of whom are known to be members of the Liverpool Amateur Association. We should have been pleased to hear some of these gentlemen discoursing in section A or B on matters of general photographic interest, or treating of experimental results comprised within their own particular range of observation. The chemists of Liverpool maintained the honour of their study or profession in a most dignified manner, and freely gave to the meeting the results of long years of scientific research. The difficulty in the photographic world is universally felt, and I know that amateurs in other towns besides Liverpool have failed to put in an appearance during the short session of this scientific parliament. But cannot this be remedied for the future by making a direct appeal to the photographers in the district about to be visited? You, sir, have often ventured to suggest increased activity in this direction. May renewed efforts lead to ultimate success!—I am, sir, yours faithfully, John Spiller.

London, October 8th, 1870.

PAUL PRETSCH'S PROCESS.

Dear Sir,—I have somewhat long considered my answer to your kind letter of September 12th. Now I think the best plan is to give a frank statement of the facts, and of the peculiarities of the said process. I have made this statement without stating any quantity of the chemicals, of the glue, &c., and I think of doing so right, because it is a difficult thing to tell you something which may be, perhaps, altered in some way or other at a later period. Still, it is a fact that the chief things used for the process are so familiar, that the success appears not in the things to be used, but in the mode of their use.

The fitness of the glue or gelatine used for this process, and also of the chemicals mixed with it, ought to be carefully considered; then comes the thickness of the layer spread upon the glass plate, the time of drying the same, and especially the time of its exposure to the open air in juxta-position with the original, being on glass or paper. I, of course, prefer the first one, although I could use it very seldom, having generally only one on paper.

The exposure in open air, but not in the sun, varies very considerably from twelve hours to several days; but generally I preferred the longer exposure, done in a good daylight. After this the plate is separated from the original (which is not hurt at all), and placed in a bath of water, where it must be watched with great carefulness. Sometimes (and generally) it is developed in about less than one minute's time; then it ought to be taken quickly out of the bath, and dried with great alacrity by means of blotting-paper. The picture, which was only weakly visible to the eye, being on a flat surface, appears now in all its brilliancy upon the coating of the plate, in raised or in sunk parts, the original being a negative of a positive picture, as it is wanted for surface or for copper-plate printing.

We always obtain a picture by these means, but now the question is, whether it is bad, or whether it is tolerable, or really useful and brilliant. Many of the faults are in the quality of the coating, or in the thickness of it, or in the time and mode of exposure. The last one is the most frequently experienced, and we cannot mend it, because the plate is spoiled, over-treated, and not worth anything. We must therefore take another fresh plate, and expose it again in the same way to the influence of the light, till we have obtained the brilliant picture wanted.

It is a *clear photographic* process, not mixed with any etching or whatever else. The picture appears suddenly, in less than a minute's time, in all its gradations of more or less fine granulation in its darkness or lights, a drawing in all its beauties, a photograph in all its peculiar tints. It has been caused by the influence of light upon all the portions of the plate where it has been not or less protected by the original.

I allow generally about twenty-four hours to elapse, then the picture is treated again in water, and so, in its perfect state, it is formed by the gutta-percha mould. This is made conducting to electricity, and placed in the galvanoplastic apparatus, where a perfect copy of it is taken.

I have never said anything about not touching at all; except when the original is perfect—when there is no sky, or something else wanted to it. Giving a conducting surface to the mould is done with care, and all superfluity of the conducting material brought again away. The copy obtained by electrotype is then perfect. I have obtained in this way moulds of Don Quixote, of a drawing by Hancock, of the Venus de Milos, Hogarth's drawing, and some other ones, which prove what I have said. Copies of drawings by celebrated masters must be made in this way, because any cleaning or stretching will hurt the copy and spoil it altogether.

This is only spoken of the plates for the copper-plate press. By making plates of blocks for surface printing I have never obtained another one than in making conducting the same by the above means. The difficulty by producing those plates is only obtained by producing them in the wished for state as it is required, not too much developed or too raised, but just in a state which suits the printing of them. That these plates, especially if they are taken by photography from life or any other object, cannot be so deep, or done like a wood engraving by hand, is quite natural; the printer ought to become accustomed to such kind of work, and I have been fortunate enough to find at least some of them in London for this purpose.

So I have here stated the conditions and mode of producing those plates. Still I am convinced that when this mode becomes more applicable for use, it will become gradually the mode of producing them in a much shorter time—almost as quick as being able to take such an ordinary photograph by the camera, to develop them, and to make them raised or sunk as it is required for printing purposes. For block printing we can do a plate by the electrotype at the present time in London in thirty-six, and, as it is wanted, in twenty-four hours; it is thin, but sufficiently thick of being backed with type metal, and used for taking any number of copies. Not so for copper-plate printing, because we want for this purpose a solid copper-plate, the surface of which may be coated with steel, &c. However, *perhaps* we may find some way to obviate this.

Although I have been the first one who has obtained a patent for the said process, still I had the opportunity myself, and I am informed that there are at least about six more patents taken out in England for this purpose; and I am convinced that in a short time, when this mode of producing plates and blocks becomes more known, and when there is no man or institute which is willing to stop it, there are taken fitfy patents, or perhaps more, for doing similar things.—Believe me to be, dear sir, yours very faithfully, Paul Pretsch.

21, *Himmelpfortgasse, Vienna, 2nd October*, 1870.

THE RECENT CHARGE OF PIRACY.

Sir,—I beg to call your attention to the case of infringement of copyright heard at the Worship Street Police Court on Thursday last, in which I was the defendant. As the partial reports which have appeared in the *Times* and other papers are calculated to injure me, I request you willl be kind enough to insert this statement in your valuable journal. I am not a photographer, as stated in the report, but a frame-maker, having a shop in Tabernacle Walk. A few months since I purchased of a traveller some photographs. Amongst them was one called the "Reaper." This photograph being rather pale, to improve its appearance I had it coloured. I then put it in a gilt frame and exposed it in my shop-window for sale. In the window it remained for many weeks, and no one cared to buy it. Th fact that it was openly exposed in my window for a long period goes to show that I had no knowledge that copyright was claimed for it. One day a man came in who asked to look at it, and, after some bargaining, he bought it for six shillings. He wanted other photographs which I had not. I showed him what I had in stock, but none of them suited him. I then received the following list of what he wanted:—3 Life-boats—2 Sands—Challenge and Companion—2 Erin, Farewell—Grace Darling—Home Treasures—Mother of our Lord—Soldier Boy—David and Goliath and Companion—England, Farewell—Bedtime. I told him I would see what I could do to get them for him; but I had no real intention of doing so, as I saw amongst them several copyright subjects. Mr. Cunnington happened to call at my shop a few days afterwards respecting some frames he had ordered to be made. I showed the list to him, and asked his opinion about it. He said he thought the man was an agent of Brooks trying to induce me to supply copyright photographs. He then said, "Get some of Brooks's own photographs, cut off the stamps, and sell him them; if he is not an agent, there will be no harm done; and if he is, Brooks will find that he has bought his own photographs. Should you happen to be summoned, the stamps cut off, produced by you, will be an answer to the case." A day or two afterwards Mr. Cunnington called again, and said he had four of Brooks's photographs. He produced them, cut off the stamps in the presence of myself and shopman, gave me the photographs, and retained the stamps cut off himself. The photographs were then mounted, and given to an artist to colour. In the meantime I received the following letter:—

(Copy.)

"2, Cardigan Street, Kennington Cross, S.E.,
"August 25, 1870.

"Sir,—I am very much disappointed that you did not get that little order of mine up according to promise, as I am very much in want of them, and will take it as a great favour if you can oblige me with them by the end of week; if you cannot complete the whole of the order, please let me have the Challenge and Sanctuary, English and Scotch Gamekeepers, Reapers and Companion, the Life-boats, Entanglement, Bedtime, and the Favourites, and the others as soon as you can to follow. If I do not hear from you I may conclude they will be ready on Saturday evening. Your earliest attention to this will greatly oblige—Yours, respectfully, W. S. Cope."

"To Mr. Knight."

Accordingly the man called and purchased the four photographs, which were ready for him, and also two or three others non-copyright. He then left, saying he should want some more. During this time I believed I was dealing with an agent of Brooks's, and considered myself perfectly justified in meeting craft with craft. I next received the following letter, giving me a more extensive order for copyright subjects.

(Copy.)

"Sept. 15th., 1870.
"Mr. Cope, 18, Prince's Street, Cowley Road, Oxford.

"Mr. Knight—Sir,—As I am staying in Oxford, and shall be for the next five weeks, I can sell a good many of those subjects I bought of you last week, but I find they sell much better plain. I can do with another pair of Challenge and Sanctuary, the large size, 6 pairs of Erin and Reapers, 6 pairs of the Mother of our Lord, English and Scotch Gamekeepers, 6 Bedtimes, 6 Grace Darling, and 1 pair of Favourites, 36 in all, plain. Sir, if you will send me word by return of post when they will be ready, and the amount, I will send you a Post Office Order for the same. An answer to this will greatly oblige—Your's respectfully, W. S. Cope.

"P.S.—Send word what you can do them per dozen. The above address will find me."

This letter is dated from Oxford, and knowing that Mr. Brooks has a shop at Oxford, I felt still more certain that Mr. Cope was an agent of his. No notice was taken of this letter. I was absent in the country for a few days with some relatives in the neighbourhood of Oxford. While there I took the opportunity of calling at the address of Mr. Cope, whom I did not succeed in finding. On my return to London the following week, I found that five summonses had been left at my shop during my absence. At the hearing of the case, evidence was given to prove that the photographs sold—excepting the Reaper—were Mr. Brooks's own photographs. Mr. Newton, the magistrate, was not satisfied, and proceeded to give his judgment; and, upon my solicitor rising to address the court upon the points of law involved in the case, angrily ordered him to sit down and hold his tongue, or he would find means to make him. Then, with the case only part heard, he condemned me to pay fines to the amount of £25, or suffer ten months' imprisonment. There were many persons in court who can testify to the unjust manner in which I was treated by the magistrate. I am informed that my only remedy is to apply to the Court of Queen's Bench for an order to have the case reheard, which course I purpose to adopt. I have always understood that an accused person has the right to have the *whole* of his case patiently heard and considered before judgment be given. This is not the rule at Worship Street. Had the magistrate allowed an adjournment, other evidence could have been produced to prove that the photographs were Mr. Brooks's own goods. Trusting you will assist me by inserting this statement, I remain, sir, your obedient servant,

G. W. Knight.

56, *Tabernacle Walk*, *Finsbury*, *October* 12*th*, 1870.

Talk in the Studio.

Very Sensitive Test for Hyposulphites.—The *Journal fur Chimie* gives the following as a very delicate test for hyposulphites:—Dissolve 1 decigrm. of very pure permanganate of potassa and 1 grm. of perfectly pure soda (prepared from sodium) in half a litre of distilled water; there is thus obtained a perfectly red-coloured liquid, which, upon the addition even of a very minute trace of any hyposulphite, becomes at once green. This test, the author states, is so delicate, that traces of a hyposulphite present in neutral sulphites may thus be detected.

A Photographic Barometer.—A paper "On a Photographic Barometer" has been published by Prof. P. Volpicella, at Rome.

Photography and the War.—In a letter from Dr. Vogel we learn that he arrived in Berlin just too late to take charge of a photographic detachment which has just been despatched to Strasburgh, his assistant, Mr. Schwier, and another able photographer, Mr. Ouidde, having been sent instead.

Stains on Opal Glass.—Referring to the method of removing stains from opal glass, Mr. Forrest writes that it is important to remember that ordinary emery powder will not do; the kind required must be much finer than that usually sold. Mr. Forrest will have pleasure in giving a sample to any of his brother photographers wishful to try it. The best mode of using it is to place a small portion on the stained glass, and then place over it another small piece of glass, which is then worked with the finger, so as to polish away the stain.

An American Local Photographic Society.—One of the proposed conditions of membership in the Central Ohio Photographic Society just in course of formation is to the effect that it shall be required of each member to "furnish twice a year as many prints from one of his best negatives as there are members of the Association, together with his formula written in brief. These formulas will then be arranged in form, and printed, each member receiving a copy, with a package containing a picture from each of the other members, so that by reference to the printed formula you can see what each artist uses, and have the result before you."

Effective, but Offensive.—A photographer in Indianapolis is said to expose delinquent customers by displaying their portraits upside down, labelled "Not paid for."

Apprenticeship.—A correspondent of our Philadelphia contemporary suggests the importance of a regular system of apprenticeship in photography as an aid to advancing the art and profession, and proposes it for the attention of the National Photographic Association. He says:—"I feel that a proper system of apprenticeship to our profession will work a great change in the practice of photography, and fairly revolutionize the whole business. A proper education to fit a student and practitioner for any profession is an absolute necessity, and I am one of (I hope) a great many who are not willing to allow that photography can be taken up and successfully practised without the proper instruction. The basis for that instruction is what I conceive to be the object and duty of our committee."

Platinizing Glass.—R. Boettger recommends the following process :—Pour rosemary oil upon the dry chloride of platinum in a porcelain dish, and knead it well until all parts are moistened; then rub this up with five times its weight of lavender oil, and leave the liquid a short time to clarify. The objects to be platinized are to be thinly coated with the above preparation, and afterwards heated for a few minutes in a muffle or over a Bunsen burner.

Bleaching Ivory.—Dr. J. Artus, in *Les Mondes*, gives the following method :—" The objects made of this substance are first placed into a solution containing 227 grms. of soda (carbonate) in crystals, and 907 grms. of water. After having been left in this fluid for two days, the ivory objects are well washed in pure water, and then immersed into a solution composed of 340 grms. of sulphite of soda and 906 grms. of water, and kept therein for five or six days, after which time there is added to the liquid, yet containing the ivory objects, 28 grms. of hydrochloric acid diluted with 112 grms. of water. After the acid has been added, the vessel (glass or porcelain) containing the liquid and ivory should be covered, and left standing for from twenty-four to thirty-six hours, after which time the ivory is taken out, washed in clean water, and dried. The quantities of ingredients herein specified suffice for 453 grms. of ivory.

Cement for Photographic Vessels.—We mentioned a year or two ago that an excellent cement for fixing iron or stone was made by mixing together commercial glycerine and ground litharge. To-day we read of many other applications of this compound, which seems to be extremely useful. As a cement for joining chemical apparatus it offers many advantages, for it is unaffected by chlorine, hydrochloric acid, sulphur vapour, sulphurous acid, nitric acid, and, indeed, resists most corrosive vapours. Further than this, it withstands the solvent action of alcohol, ether, sulphide of carbon, and all hydro-carbon vapours. It hardens in from ten to thirty minutes if mixed of the consistence of a thick dough, and sets under water as quickly as in air. Moreover, it will stand a very much higher temperature than any oil cement. The composition may be also employed for moulds for electrotyping. For this purpose glycerine must be stirred with the litharge until a mixture of the proper consistence is obtained. The article to be copied must be smeared with dilute glycerine before the mixture is poured on, and plenty of time must be given for it to set.—*Mechanic's Magazine.*

To Correspondents.

L. S.—Long washing before toning is not at all necessary, and often very undesirable, as making the toning process slow and difficult. It is important to wash after toning and before fixing, as any trace of acidity in the print or toning bath will decompose the hyposulphite, and endanger permanency.

F. J. B.—Ordinary chloride of gold is a ter-chloride; that is, it contains three equivalents of chlorine in combination with each equivalent of gold. The atomic weight of gold is 197, and that of chlorine 35·5. If, therefore, you take 197 grains of pure gold and convert it into chloride, it will form 303·2 grains of ter-chloride of gold. A sovereign weighing 122 grains contains 112 grains of pure gold, and will form 172 grains of chloride of gold. Commercial chloride of gold generally contains either a trace of hydrochloric acid or a little chloride of sodium, as the pure neutral salt is difficult to crystallize; hence a 15-grain tube is guaranteed to contain 7½ grains of pure gold, which is rather less than the proportion of pure gold in 15 grains of pure neutral chloride. 2. Acetate of soda, being a very soluble salt, is not easily recrystallized by using a hot solution. It is soluble in little more than half its own weight of boiling water, and in three times its weight of cold water. If you powder two ounces, and add one ounce of water, then apply heat until it dissolves, and afterwards let it cool and crystallize, you will lose about a third of an ounce. It may be recrystallized more easily from alcohol. If fused, great care is required, as, whilst it fuses at a temperature of 550°, it decomposes at 600°. As a rule, ordinary commercial samples answer for toning purposes perfectly well. Where especial purity in chemicals is important, the best plan is to obtain them from a photographic chemist. To persons unfamiliar with chemical manipulations, any attempt to such work is generally uncertain and costly.

C. S. Kelsey.—Col. Stuart Wortley described his method of preparing the double chloride of gold and potassium in our issue for August 12th. We regret that our engagements do not permit us to answer questions of this kind by private letter.

Oils.—There are many elementary works on oil painting for beginners. There is a shilling " Manual of Oil Painting for Amateurs and Beginners," which was published by Bogue, of Fleet Street. There are three—one for landscape painting, one for marine painting, and one for portrait painting—published by Winsor and Newton, of Rathbone Place. There is a good elementary chapter on oil painting in " Newman's Harmonious Coloring Applied to Photographs." Or you may apply to such a house as Newman's for the best elementary work on oil painting. When we first gave attention to oil painting, many years ago, we picked up about a dozen of such works; but most of them, being elementary, have not been preserved, and we do not remember all their titles now.

Horatius.—Mr. Mudd's address is St. Ann's Square, Manchester. We do not know of any agent for the sale of his photographs in London.

A. Youth.—You are scarcely sufficiently specific in speaking of the " unevenness " of the untoned print you enclosed. We presume you refer to some inequality of depth in the background. It might be due to irregularity of development, or inequality of lighting, but is most probably due to the lens not covering well up to the corners. Much of the uneven effect disappeared after toning and fixing.

W. G. C. asks if our correspondent of last week, C. W. Major, will describe how he develops his Liverpool dry plates, as he, W. G. C., invariably finds the plates fog shortly after the image appears, when he follows the instructions sent out with the plates. When the plates fog in the ordinary course of development the remedy is simple, the addition of a little more of the bromide solution. When they fog from prolonged development it generally indicates that the plates have been under-exposed.

E. Hobbs.—There are two methods mentioned in the article to which you refer, and you do not say which you have tried. The cause of difficulty in toning is probably due to the retention by the bath of some traces of iodide of silver, which is inimical to toning. Did you carefully follow the course indicated for the purpose of getting rid of the iodide of silver in the negative baths? Have you also satisfied yourself that the toning bath is in good active condition?

H. S.—You have a little too much top light. Subdue a portion of it by blinds or stippling. Do not intensify quite so much. The especial purpose of the lens you name is extreme rapidity; except in that respect, we do not know that it will be better than the lens you have. From a hasty glance at the MS. we think it probable that it will serve your purpose. We regret that we have not time to examine it with critical care.

J. B. M. asks where he can obtain the opaque oval masks to cover the print whilst the edges, before protected, are sunned down. We do not know any one who supplies them, but should imagine that the same person who makes the masks with oval apertures could supply the ovals cut from such apertures. 2. If you have only access to water containing salt, rinsing your negatives with distilled water is the only safe plan. 3. We do not see why the traces of salt in the washing water should cause the toning bath to rapidly decompose; but if you find it so you had better use distilled water. 4. Anoint the cork of your varnish bottle with a little india-rubber paste. As this is not soluble in alcohol, it will not be affected by the varnish, and will prevent the cork from sticking.

H. Brown.—Thanks.

Williams.—The propriety of Sunday labour as a religious question scarcely comes within our province to consider. It is purely a matter for the individual conscience. Whilst many regard the Fourth Commandment as religiously binding on Christians, many others, not less earnest and conscientious, regard the Sabbath as belonging solely to the Jewish dispensation, and consider sacred days—such as " new moons, sabbaths, and appointed feasts "—as abolished by the new dispensation. Apart, however, from the religious question, there are many good arguments in favour of a seventh day's rest, and against Sunday labour as at once detrimental to the welfare of the individual and the community. So far as we can understand your position, we should recommend you to give it up; and, in the spring, devote yourself entirely to portraiture. 2. The general plan and arrangements of your projected studio seem good. Your work is, under the circumstances, very good indeed, and, with the exception of the hard, sharp lines in the background design, which destroy repose, the portraiture is satisfactory. 3. Cyanide may be used safely with care, but we do not, as a rule, recommend it. You may save all trouble and waiting in washing your negatives if you leave them for a time in water—where they will take no harm—until you have time to attend to them; and the soaking will aid in removing the hyposulphite. The cards are posted.

⁂ We are reluctantly compelled to leave over several important articles in type.

Several Correspondents in our next.

THE PHOTOGRAPHIC

Vol. XIV. No. 633.—*October* 21, 1870.

CONTENTS.

PAGE
Prosecutions of Photographers 493
Acceleration by Red Light 494
Photographic Field Equipments 494
The Transfer of the Collodion Film 495
Photography and the British Association. By W. T. Bovey ... 496
American Correspondence 497
Photography as an Aid to the Artist. By George Croughton... 498
Local Reduction of Intensity. By M. Carey Lea 500

PAGE
Non-actinic Backing for Dry Plates. By M. Carey Lea 500
The Photographic Exhibition 501
Indecent Photographs.—The Case of Henry Evans 501
Correspondence.—Dress at the Photographic Soiree—The Case of Henry Evans—Revolving Backgrounds 503
Proceedings of Societies.—South London Photographic Society 503
Talk in the Studio 504
To Correspondents 504

PROSECUTIONS OF PHOTOGRAPHERS.

There have been two prosecutions recently in which photographers have been the accused persons, in which, unless the subsequent statements are very impudently untrue, the victims have been very hardly used, and the convictions have been secured by means utterly opposed to the spirit of English justice.

The case of Henry Evans, referred to in our last week's "Echoes of the Month," appears to be undoubtedly a very hard one, and if the various statements recently made on his behalf in the daily press be correct, we imagine that the appeal made to the Home Secretary must secure his early release from prison. In another column we reprint the letter of Mr. John Milton, one of the gentlemen who stood bail for Evans, between the time of his committal and trial, who writes the *Standard* a detailed narrative of the facts as he finds them. Briefly stated the case appears to stand thus: Mr. Evans, it appears, had been for some years engaged in the sale of photographs, chiefly consisting of studies for artists, amongst whom he had a large connection. In March last he was charged before Sir Thomas Henry with the sale of obscene prints, the evidence being offered by a man alleged to be an informer in the employ of the Society for the Suppression of Vice, under whose direction the prosecution was conducted. A search warrant having been granted, several hundreds of photographs were seized, together with some etchings, engravings, and studies in oil from the life-school of the Royal Academy. The evidence offered was considered sufficient to justify a committal for trial, and having been found guilty by a jury, the accused was sentenced to two years imprisonment with hard labour, with the further penalty of a fine of £50 at the termination of his imprisonment.

So far as the general statement of the case goes there is nothing to call for especial comment. We have simply a narrative of a tradesman detected in a filthy traffic calculated to contaminate the morals of the community, and sentenced, on conviction, to a legitimate penalty. But, on further examination, the case appears to be distinguished, if respectable testimony may be believed, by circumstances of unusual hardship. From the statement of one of the bail, the photographs upon which the prosecution was initiated were thirteen card pictures, each consisting of a single figure undraped, or partially draped, in a position of repose, having no value except for artistic purposes, and without the faintest indication of any lascivious or obscene suggestion. We further learn that the stock which was seized, and afterwards destroyed, consisted of one hundred issued by l'Ecole des Beaux Arts, Paris; of one hundred studies prepared under the sanction of the Ethnological Society, upon a specific scale for comparative measurement; whilst a great many more consisted of fine artistic studies by Rejlander. The general stock of Evans comprised, it appears, a quarter of a million photographs from European galleries, and many thousands of prints and engravings, and amongst this large stock a few prints were found justifying the charge of indecency. But there appears to be no evidence that a single indecent print was ever sold, or offered for sale, by the accused. The dozen prints sold the informer, we are assured by Mr. Milton, were simple art studies, a statement borne out by the price, fifteen shillings for the dozen, really improper pictures always commanding a very high price, to compensate for risk in selling them. That Evans was a respectable man, conducting a *bona fide* business in art studies, and gaining respect for the mode in which he conducted his business, is attested by the fact that a petition addressed to the Home Secretary on his behalf is signed by two hundred and thirty-eight gentlemen, many of them his customers, all of them of high standing, including clergymen, physicians, barristers, artists, and art connoisseurs, the names of such men as Rossetti, Burne Jones, W. Hughes, and J. H. Lamprey alone serving to stamp the evidence as trustworthy. It seems, then, that a man conducting a useful business in a manner to win such testimony is imprisoned, ruined in circumstances, his home and family desolated, himself branded for life, for the venial fault of having in his possession in such a large stock a few copies of immodest photographs.

The questions will naturally arise, What possible motive could a respectable society have for this apparently vindictive prosecution of an innocent man, and why was not the testimony now produced brought forward at his trial? The question as to the motive of the society is a very difficult one. We are compelled to believe that its primary aim is the public good, and we should be reluctant to speak in any but respectful terms of a society with a motive so worthy; but, at the same time, it is impossible to escape the conviction that the officers of such a society, with their attention constantly bent in search of a certain class of cases, are apt to become warped in judgment. As an "Old Photographer" said in our last, the necessity of justifying the *raison d'etre* of the society very easily begets an over anxiety to find cases and secure convictions. How, otherwise, can we understand the employment of informers by such a society? For no less than ten months, it appears, the establishment of Evans was watched by policemen in plain clothes, endeavouring to find evidence of the foul traffic with which he is charged; and yet the sale of the cards upon which the prosecution was based appears to have been an open transaction, which might have been achieved any day, simply because the sale of art studies was the regular business of the accused. Mr. Collette, the secretary of the society, asserts that the pictures purchased for the purpose of the prosecution were of the grossest obscenity. On this point, as on many others, he is contradicted in direct terms by Mr. John Milton and others, and their testimony is borne out by petitioners of high standing to whom we have referred. On a question of what is immodest in art we know that opinions may be easily divided; but it is a terrible thing for Evans to be ruined upon a question of opinion. As to the reason why the testimony now brought forward was absent at the trial, Mrs. Evans gives the following explanation. She says:—

> This omission is amply explained in the petition—"That Henry Evans's business being purely a ready-money one, the names of his customers were unknown to him." Accompanying the petition were over 100 memorials testifying to the general good character of Henry Evans, and expressing the deep regret of the writers that they were not cognizant of his apprehension, or, as a simple act of duty, they would certainly have given evidence at the Middlesex Sessions, where, but for this unfortunate circumstance, my husband would have most certainly been triumphantly acquitted. The circumstance that the customers are ready-money ones, and take their purchases with them, and also the fact that the police had possession of the shop for a whole week, during which time it was closed, and valuable property most ruthlessly destroyed, some splendid engravings by celebrated masters being trampled under foot, the place sacked and made to bear the appearance of one huge dustheap, explains the apparent delay in the presentation of the petition, four months having elapsed. The damage caused by the Vandalism of the police (in their utter disregard for works of art and tender philosophical instruments) has inflicted upon my poor unfortunate husband a greater pecuniary loss than the wholesale confiscation of his unrivalled collection of art studies.
>
> Mr. Evans, inexperienced in such matters, innocently expected that nothing but the truth would have been spoken at his trial. It is, therefore, not surprising that his counsel was unable to battle with the tergiversations of the police.

Hitherto, we regret to say, the efforts of the friends of the unhappy prisoner have been unavailing; but we hope still to learn that the Home Secretary will not allow such an apparently clear case of miscarriage of justice to remain unremedied. But, in any case, it is a matter for the careful consideration of photographers generally. We will not do our readers the injustice to suppose, for one moment, that any of them could have any tolerance for the filthy productions which would form the legitimate subject of a prosecution like this; but there are very few photographers in whose possession nude artistic studies may not occasionally be found; some retained for their artistic beauty, others for their photographic perfection. It not unfrequently happens to many professional portraitists to be requested to produce life studies for artists, and they might naturally suppose that the privacy of their studios was sacred. But it behoves every one to beware of the possession or production of photographs of the naked human form. A policeman in plain clothes or uniform is not likely to be a very discriminating critic, nor is the police court the arena where any of our readers would willingly discuss the æsthetics of such a question. Whilst informers are permitted to prowl about seeking for cases, and whilst the decision of what constitutes art rests with a policeman, or a police-magistrate, or an alderman, or even a philistine jury, we recommend our readers to eschew everything nude or unconventional in photographs.

In the second case to which we refer—that of Mr. G. W. Knight, who was recently fined £25 for the sale of alleged piracies of copyright photographs from pictures—there appears, if Mr. Knight's statement be correct, to have been an unquestionable miscarriage of justice; but, unfortunately, Mr. Knight is, in some degree, responsible for his fate. A person presumably employed as an informer asked him to procure for him photographic copies of copyright pictures. With a full conviction that this man wished to trap him into crime, he obtains for him, not piracies, which he desired, but photographs legitimately produced under the owner's copyright. Regarding these as piracies, the informer initiates the proceedings in court. Mr. Knight's avowed object was to lead him, by this ruse, into instituting a prosecution in which he must be defeated, as Mr. Knight appears never to have doubted that his evidence that the photographs sold to the informer were *bona fide* copyright prints would be conclusive. Unfortunately for him, this evidence was not believed, and he was mulcted in the penalty. Here the accused, according to his own statement, voluntarily, and for no possible profit, undertook a transaction of which the sole purpose was to "sell" the prosecutor, and so damp his zeal in the protection of his property. In doing this, the defendant undoubtedly seemed to show sympathy with pirates, and as a man is known by the company he keeps and the sympathies he manifests, it is clear that the impression in court was influenced by these facts. Nevertheless, if Mr. Knight's statement in our last be correct, however unwisely he may have acted, the treatment of the case in court does not seem fair. Neither can we perceive on what principle of justice it can be considered legitimate to employ agents to tempt men into crime, and then accept the evidence of the tempter against the accused.

ACCELERATION BY RED LIGHT.

We have received from M. de Constant some curious and interesting details of experiments for testing the value of red-and-white diffused light as an aid to shortening exposures in the camera. M. de Constant has before recorded the results of his experiments with a white card employed as a lining to the camera, in order to throw upon the sensitive plate during exposure a weak reflected white light. With this aid he found an undoubted acceleration produced; but it was at the expense, in some degree, of the excellence of the image, which was flat, tame, and without relief. He has recently been trying the effect of lining the camera with a piece of cardboard coloured red. With this, as with the white lining, a considerable shortening of the exposure is secured, the time being reduced by one-fourth; but with the red lining the character of the image produced is altogether different. Whilst with the white lining the image was tame and flat, with the red it requires an extraordinary increase of vigour. The increased action takes place in greater ratio on the highest lights of the picture, unusual brilliancy and increased relief being the result. M. de Constant is still engaged in prosecuting his experiments, and promises to send us shortly some comparative examples and further details. Our fullest information shall be placed before our readers.

PHOTOGRAPHIC FIELD EQUIPMENTS.

As our readers are probably aware, there are attached to the staff of modern armies certain parties of soldiers to perform various duties of a scientific or technical nature, now inseparable to carrying on a successful campaign. Such duties usually fall to the Engineers attached to the expedition, for the officers of this corps, as also the men, have received special education and instruction to fit them for the fulfilment of such tasks. The Engineers, indeed, together with the Artillery, form the scientific portions of the army, and take rank before all the regiments except those of Cavalry, a separate academy and method of training having been instituted for all gentlemen desirous of taking up commissions in these *élite* branches of the service. In the Continental armies the state of things is almost the same, the Engineers and Artillery being the most learned bodies as regards the sciences and professions, and relied upon, therefore, to execute all services requiring the display of peculiar ability.

These services are of a very multifarious character, and vary with the necessities of the campaign. The duty of establishing telegraph lines, and maintaining and working them, forms, perhaps, one of the most important duties of the Engineers, and one which has been remarkably well carried out by the Prussians in the present campaign.

Another task is that of reconnoitering the enemy's country for the purpose of obtaining reliable sketches and topographical plans, which are executed and elaborated by skilled surveyors and draughtsmen in the corps; the choosing of suitable ground for encampments, for earthworks, and fortifications, as also the construction of these upon a proper and well digested system, belong to the duties of the Engineers, as likewise the more recently adopted expedients of army signalling and balloon observations. Lastly, there is the humble occupation of the photographer to be assumed by the professed soldier, an art which, although at present considerably used in army affairs, will, without doubt, be found capable of application hereafter to a much more extended degree.

Although we know but little of the internal arrangements of the Prussian Army Corps, still we cannot but conclude, from the ready and perfect manner in which the enormous masses of troops are moved, handled, and cared for, that the Engineer service must be in a state of wonderful perfection, and that the different trains—those of telegraphy, signalling, engineering, photography, &c.—must all be well equipped and capable of fulfilling their several functions with rapidity and certainty. It is, without a doubt, for the most part due to the wonderful organisation of the Prussian forces that they have been able to march forward with such unvarying success, and to rely so much upon their own resources. The French Engineer and train service broke down in the very first instance, before a blow had been struck, and there is reason to suppose that the organisation of this branch of the army had been altogether overlooked or neglected.

As regards our own Engineer service, there appears to be much ground for suspecting that it is at present not in a more advanced state than was that of France. At the close of last session Captain Beaumont, an Engineer officer, stated positively that there existed not a single mile of telegraph wire in the Engineer equipment train, which, indeed, had scarcely been formed. Whether the photographic equipment is in a similar backward condition we know not, but it is certain that a collection of photographic requisites of a proper character, chosen so as to be both suitable and complete in its nature, cannot be got together on the spur of the moment, and should therefore be the subject of some care and solicitude in leisure moments. For the Abyssinian expedition the equipment is said to have been a very good one, but it may happen in the next war that our enemy will not be so considerate as to give us a few months' time to organise our different staffs before attacking him. The best plan would undoubtedly be to examine well into the various methods at present in vogue for out-door photography, and to invite the experiences of well qualified landscape photographers—such as England, Gordon, Stuart Wortley, Robinson, Blanchard, and many others—so that a thoroughly efficient equipment might be organised upon which perfect dependence could be placed.

THE TRANSFER OF THE COLLODION FILM.

The separation of the film from the plate—which, in the early days of photography, was a regular practice, soon passed out of use, and became an operation much feared, and, when attempted, was regarded rather in the light of a skilful trick—"has lately," remarks the *Photographische Correspondenz*, "assumed, thanks to the Lichtdruck process, where reversed negatives are not unfrequently indispensable, the form of a simple and easily conducted operation. In the photographic journals many methods have of late been given for reversing the film; and to make these complete, we deem it right to publish, in addition, the plan adopted by our friend M. Carl Suck, whose process is one which yields such perfectly successful results that collodion films measuring as much as thirty inches in length have been thereby transferred.

"Instead of employing, as heretofore, the so-called leather collodion (that is to say, normal collodion to which a few drops of castor oil have been added to render it more tough) for the transfer of the film, gelatine is now used, and with much more certain results. In order that the gelatine, on drying, should not be of too brittle a nature, a small quantity of glycerine is added to the solution, the compound being, indeed, prepared in the following proportions:—

Gelatine	8 parts
Glycerine	1 part
Water	32 parts

The gelatine is cut into small pieces and thrown into the water, and, when sufficiently swollen, the vessel containing it is warmed until the gelatine is completely dissolved. When this is the case, the glycerine is added during considerable agitation, so that an intimate mixture is secured; and when the same has cooled sufficiently to allow of its being applied to the negative it may at once be used. The negative must on no account be varnished, and, in truth, we know of no process yet by means of which the transfer of varnished negatives is at all possible. The compound, it will be found, is so thick that some arrangement is necessary to spread it out upon the plate in a uniform manner. The best plan of proceeding is, to employ a stout glass rod for the purpose, in a manner recently adopted by M. Suck.

Upon two parallel margins of the plate two narrow strips of cardboard are placed, the stoutness of which govern the thickness of the gelatine film to be applied. The gelatine is poured upon the plate between the two strips of cardboard, and is afterwards spread out by the aid of a stout glass rod, rolled to and fro over the mass in the manner of a roller. When the gelatine mixture has been pressed down uniformly to the thickness of the card, the negative is put away in a horizontal position in a locality free from dust, where it is allowed to become perfectly dry. It is subsequently varnished in the same way as a negative, and then cut all round to the glass near the margins of the plate, when the film will be found to leave the polished surface at once.

It is a wise precaution to cover the collodion surface of the negative image thus removed likewise with varnish, partly because in this way any warping or bending of the film is avoided, and partly to protect the negative when being used in the printing frame, for it must be remembered that although the collodion surface is probably sufficiently hard to resist injury from a mechanical source, still its porous character causes it to be readily damaged by chemical influences. In printing operations, especially, it is to be feared, that in damp weather the nitrate of silver may become readily absorbed by the film, and thus give rise to stains and other defects upon the surface. For this reason the coating of varnish is exceedingly serviceable, and renders very important service. In the methods of M. Kleffel and M. Jeaurenaud, both of whom recommend the coating of the film with normal collodion instead of varnish, the separated image is more readily injured, and much less capable of resisting injurious influences.

With M. Suck's *modus operandi*, it is seldom that a failure occurs, and this not so much from the collodion refusing to leave the glass surface, as from the film itself becoming stained and opaque in some parts. A good plan to obviate this, as also the splitting of the film, is to moisten the negative in the first instance in acidified water (one part of hydrochloric acid in ten or twelve parts of water) as suggested by M. Jeanrenaud, the plate, after treatment, being thoroughly washed, to remove all traces of acid. Such an operation greatly facilitates the subsequent manipulations.

PHOTOGRAPHY AND THE BRITISH ASSOCIATION.

BY W. T. BOVEY.

The absence of matter bearing on our art science from the proceedings of the recently held scientific congress appears to have raised a few small ripples on the course of photographic opinion, and the journals, true to their mission of jealous watchfulness, whilst lamenting the shelving of the art they represent, offer suggestions which Mr. Spiller, in his able letter, practically repeats by showing what he conceives to be the wisest course for future adoption. With all due deference to the views held and expounded by an authority so high and deservedly esteemed as the gentleman just named, I cannot but conclude that his proposed scheme, if practically adopted and executed, would have a tendency to humiliate rather than to elevate the art to that high position it might, without any show of vain arrogance, assume. An enthusiast in photographic matters myself, I can well conceive the length to which an enthusiastic declaimer might be drawn in attributing powers to, and making claims for, photography which the art does not nor ever will possess or deserve, thus illustrating, with a ludicrous pencil, the story of the organ bellows-blower, who plumed himself on the important part he had filled in a musical exhibition that had been greeted with overwhelming applause.

Reference has *already* been made to the connection of photography with scientific enquiries, and doubtless much reason (false) might be adduced to show that photography forms part and parcel of every branch of science that invokes its aid. But it must be conceded that in astronomy, anatomy, in *all* scientific fields that require photographic assistance, the help afforded by the art is very secondary in its nature, and can be regarded only as short writing, whose characters, by their intelligible form, enable the eye to lessen the labours of the understanding. There is, most certainly, but little difference between the process used in producing photographic records of solar eclipses, and the means adopted to perpetuate the stolid features of Stone Clod, the rural clodhopper. In point of unvarnished fact, the objects in both cases are as alike as the means, inasmuch as the end aimed after in both instances is to secure records that may be viewed when the objects original have passed away.

If photography is to be represented at the future meetings of the British Association, let not its representatives be so allured from the path of common sense by strong feeling as to induce them to claim for the art they represent anything that is without the limits of its capabilities; and it is now my object to show that, if pursued on a right track, those capabilities are high indeed, for I have no hesitation in saying that there exists no open scientific question so full of importance as the leading point I would wish taken up by photographers as a base for united and painstaking investigation. I allude to the too little considered question relating to that quality of light called, for convenience, *actinism*, a power which, I believe, plays a part in the economy of nature more important than is yet understood or appreciated.

Some little time since, I made brief allusion to some observations I had made in reference to the effects produced on the nervous systems of individuals by the absence or presence of *actinism*. Since the time referred to, I have followed up a course of observations, and am now firmly persuaded that my former conclusions were not grounded on surmise or mistaken coincidences. Admitting my conclusions as correct, if we seek an analogue from among the applied sciences, we find, in the application of magnetism, a repetition of the influence which, I believe, is exercised by actinism. If such should be a reality and no fable, may we not, by patient photographic observation, succeed in establishing beyond a doubt the connection that probably exists between actinism and aerial electricity? I believe we can, by an outlay of a few minutes of time daily, our observations being aided by one of those philosophical *multum-in-parvo's* which combine a thermometer, barometer, and hygrometer in one. A few of these instruments set up in localities that lie apart, a photographic establishment in each selected place would be the observatory, the photographer holding the same should be the observer, whose duties would be to keep a daily register of meteorological and chemical facts that came within his daily experience and notice, such register being carefully noted in a tabulated form, the information being conveyed under the separated headings of "weight," "temperature," and "humid atmospheric condition." Clouds should be observed and described, and the quality of actinism remarked on at each observation. The presence of an unusual degree of actinic power should be made a matter of special comment, and the kind of weather that follows those actinic storms should be particularly noted. The most desirable place for conducting such observations would be in places where printing is done daily, as it is in such places the observations could most conveniently be conducted, on account of the continuous nature of the work.

Meanwhile, whilst those who cannot neglect the business of commercial life are stealing moments to accumulate valuable records, others possessing the blessings of time and means might pursue the investigations that require time and money. A powerful electro-magnet connected with a battery should be adjusted in a chemically dark room, and over the poles should hang, suspended by a thread, a hook of thin copper wire. The sensitive substances used in photography might be placed in a tube, and carefully placed on the hook. First should be observed the effects (if any) produced by the magnetic current when the magnet is put into connection with the battery; a pencil of light might then be admitted into the room, so as to pass through the tube, and the further results carefully observed. And what then? Why, let records of these observations be placed into some competent hands, whose duty it would be to accurately compare experiences and to weigh conclusions by comparison with known phenomena of a kindred nature. And what then? What if we should succeed in establishing a connection between actinism and electricity by means of an analyses of experiences? What then? Why, photography would at once upset a deal of our present scientific highly coloured imaginings. Our views concerning the combined threads that unite in single rays of light as seemingly proved by the solar spectrum would, perforce, undergo much modification. Phenomena which we now regard as causes would assume their truer character as effects. Our ideas concerning the supposed intensity of the sun fire would evaporate or modify before a clearer light, and we should soon admit the possibility of heat and light reaching the most distant planets that would melt the eternal ice mountains which science now conjures up. In a word, it seems to my limited understanding that if photographers can prove that actinism and electricity are one and the same thing, they will have repaid doubly to science the debt they unquestionably owe her. To such a possibility as I have hinted at in this paper it might be objected that the most delicate of electronometers would fail to detect the presence of electricity in the violet rays of the solar spectrum. Probably so. Neither has the most sensible thermometer succeeded in extracting heat from melting ice, which, although a natural production, yet, as congealed water, it exists in a condition that nature is very anxious to get rid of. So long, therefore, as there remains ice to be dissolved, so long will that ice greedily devour the presented heat, which it will only yield up under chemical pressure. Philosophers name this "insensible colour" "latent heat." Might not electricity also exist in a latent form, and as ice can be acted upon chemically to force from it the heat it retains, is it not possible that latent electricity might be just the condition to act chemically on sensible substances, of which the iodide and chloride of silver are familiar examples? I might multiply instances bearing on my case sufficient to fill the News. I shall allude to one more only at this time.

It is a singular fact that actinism decreases as free electricity becomes increasing; hence the slow light of winter and midsummer. The lessened action of actinic power during seasons of cold are accompanied by a great increase in the development of free electricity. From this I might be permitted to draw the inference that free electricity is actinism expended—that electricity set free is not in possession of chemical power, just as heat radiated is no longer a heating medium when its temperature is reduced by the colder air.

In concluding what has been to myself an interesting subject, I have only to add that, without doubt, researches connected with actinism would, if successful, enlarge our knowledge in reference to the development and nature of the latent image. We only require to make such knowledge accurate to be enabled to have at command an instantaneous process. More to the purpose still than that, we should be in a position to prescribe natural bounds to the capabilities of photography.

I have just paused to ask of myself why I do not at once give all my thoughts to an elucidation of the problems I have started. The prattlings of my little ones that reach me from an adjoining room provide the response. My mission is hard work of hand as well as brain. Yet if I could assist in making observations, or in digesting the records of the varied observations of others, I am at the service of those who desire to see photography occupy position at the next meeting of the British Association.

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AMERICAN CORRESPONDENCE.

Impure Acetic Acid—Washed Sensitive Paper—Ridges in the Collodion Film—Photographs of the Protuberances on the Sun—The December Eclipse.

Impure Acetic Acid.—How often is the photographer vexed and mystified by the obstreperousness of his chemicals! Sometimes a "glorious day appears," when, with all things prepared with the utmost care, he sets out to make something specially fine, his solutions seem to have become totally depraved, and he can do nothing with them. Thus defeated and chafed, he returns to his own dark-closet, locks himself and his traps within it, and proceeds to exercise his detective powers in order to find out just where the trouble is. After a good deal of persistence, this vexation is lessened in no great degree when he discovers that the whole trouble has been caused by the careless preparation of some chemical, for the impurity of which there can be no earthly excuse.

Such an instance I have to record. An amateur friend, whose work exceeds that of many of our experienced outdoor workers, made due preparation, and proceeded to the sea shore for the purpose of making instantaneous views. Arriving at his destination, he found all things favourable so far as the day was concerned. The first plate was exposed with a drop, using the full opening of the lens, on a schooner, with a foreground of heavy surf beating on the shore. On development, not a trace of an image could be detected. Several time-exposures were then given, with exactly the same result—*i. e.*, no result at all. Here was trouble! And what caused it? The iron developer never performed such antics before, and either the collodion or the bath must be at fault. To test them a plate was exposed, and developed with a solution of ammonia-sulphate of iron. The result was perfectly satisfactory. The ordinary iron solution first used was, then, clearly at fault. When it was applied to the plate, a slight precipitation was noticed, indicating that something was wrong. Another sample of acetic acid was procured of a photographer near at hand, and the day's pleasure completed, although it was marred by the fact that there must follow an investigation that would probably cause some pains. In the evening, the necessary reagents being at hand, a sample of the suspected acid was submitted to a test, and found to contain phosphoric acid. But how should that chemical appear in acetic acid? Upon inquiry being made of the dealer who sold it, he confessed that the manufacturer of the acid filtered it through animal charcoal (burned bones), to remove traces of organic colouring matter in the solution. By so doing phosphate of lime was dissolved and carried through the filter along with the acid and in combination with it. There was the whole secret—made apparent at once—of the annoyance. When the trip described was being prepared for, the developer was made as usual for instantaneous work, viz.:—

Protosulphate of iron	20 grains
Water	1 ounce
Acetic acid No. 8	2 drachms

The iron was dissolved in the water, and the acetic acid added, when a slight precipitate was produced, which could not be filtered off. This could not be accounted for at the time, but it is now very plain that it was phosphate of iron, and the decomposition on the plate was phosphate of silver.

Should a sample of acetic acid be suspected at any time, a very sure and good test for the presence of phosphoric acid is, the addition of a few drops of nitrate of silver. If phosphoric acid is present, a copious white precipitate will take place.

Too much care cannot be exercised in procuring chemicals of the greatest possible purity, and in such cases the best is invariably the most economical.

Washed Sensitive Paper.—I have read with a great deal of interest the remarks of Col. Stuart Wortley and others on the subject of washed sensitive paper, and recent experiments have enabled me to confirm the advantages he claims, which repay one fully for the additional trouble made necessary. The past summer with us has been a very trying one, with the mercury for weeks averaging above 90°, and another summer will, I am sure, make some such method as Col. Wortley suggests positively necessary. Here is another candidate for favour, however, which is worthy of trial, and which comes from my friend Jex Bardwell, Esq. He writes me, viz.:—

"I give you a formula that I find enables me to keep the paper I use for three or four days without the least discolouration or loss of sensitiveness, and without washing or the trouble of fuming pads or paper:—

Silver Bath.

Nitrate of silver	480 grains
Water	16 ounces

Dissolve, and add a few drops of conc. aqua ammonia, and then add nitrate of ammonia, one ounce. Float the paper a minute, and then draw it over the edge of the dish, in order to remove superfluous solution. Now lie the sheet, face down, on a quire of white printing (news) paper, then lie a couple of sheets of the same paper on the back of the sensitized sheet, and press the hand back and forth over the whole, until all the solution is taken up by the paper underneath, after which hang the photo-paper up to dry. The same sheets of newspaper may be used at least a dozen times without renewal.

"Paper thus treated will be found susceptible of any tone, and also extremely brilliant."

Ridges in the Collodion Film.—I have recently suffered somewhat in the loss of some valuable stereoscopic negatives that were in my possession, from those miserable, mysterious ridges in the film which have caused so much earnest discussion. The printer whose business it was to care for them avers that they were subjected to no unusual dampness; and yet, after lying in their rack a few weeks, they were taken out to print from, and were found full of ridges, as loathsome as serpents, and not unlike them in form and figure. In some instances no amount of doctoring would effect a cure, but in others the following plan was found useful. It may be familiar to some of the readers of the News, but I will state it, as it may be useful to others :—

First, make a minute hole in the least objectionable part, to permit the escape of air. Now warm the negative, and either flow with alcohol, or draw a camel's-hair brush, saturated with alcohol, along the ridges; if the negative is then heated well, the ridges will contract and disappear, care being taken to press down with the brush, or finger nail, or some smooth hard substance, those portions from which the air cannot readily escape. After this, re-varnish.

The ridges described may be produced at will by placing the negative for some time in a damp place, and then be rendered entirely invisible, even where there is a uniform tint, such as the sky. Negatives thus diseased may be rectified also by soaking the varnished negative very carefully in water, then washing them with alcohol, and afterwards re-varnishing them. There is a time when it is too late to doctor them—*i.e.*, when they become badly checkered in all directions.

Photographs of the Protuberances on the Sun.—Just as I am about to close my letter, I receive a communication from Mr. H. O. Bly, photographer, at Hanover, New Hampshire, which contains some startling and interesting intelligence. I cannot communicate it to you in better shape, so I copy the letter, which reads as follows :—

"On Thursday last, Sept. 29, Prof. Young, of Dartmouth College, already well-known among scientific men, accomplished the feat of photographing the protuberances on the sun. It was effected with a telescope assisted by a spectroscope of peculiar construction, the only one of the kind in the country. The chemicals were worked by myself. A full description of the *modus operandi* of performing what has never been attempted before will be sent you soon. Enclosed you will find two prints showing protuberances ten thousand and fifteen thousand miles in length, made directly from the negative."

This intelligence will no doubt interest your scientific readers very much ; and to further gratify them I enclose you the prints, that they may reach you early. There are, as you will see, unmistakable protuberances in abundance on the surface of these little images, scarcely half an inch in diameter. In my next I shall communicate to you fully all the details that come to my hands. There appears to have been considerable motion of the telescope during the exposure, which repeats the protuberances in both cases. Great praise is due to Prof. Cook for this wonderful accomplishment of a thing which was only spoken of as barely possible a year ago, when we were all full of protuberances here.

The December Eclipse.—The above excites a query in my mind; namely, Could the British Government have foreseen Prof. Cook's success when the use of a vessel was refused some of your enterprising men of science recently, for their expedition to witness the December eclipse? Foresightedness is expected in diplomatic circles, yet we hardly expected anything to equal that. I am sorry to see that our Governments are so little disposed to aid science, yet we may hope to see better days.

An expedition will leave here soon, for Spain, to observe the December eclipse, and among those who form a portion of it are, Prof. Young, of Dartmouth College; Prof. Edward C. Pickering, of the Boston Institute of Technology; and Mr. O. H. Willard, the photographer of this city. These three gentlemen were all members of the Eclipse Expedition to Iowa in August, 1869, and we hope they will return with very interesting results.

If parties knew the glory and the grandeur of a total eclipse, volunteers would abound for any expedition the Government would patronize. It is a sight, once seen, never to be forgotten; and as there are a few points yet on which the world of science needs further light, I hope intelligent England will not refuse her shoulder to the wheel.

I have already exceeded my space, and must close.—Very truly yours, Edward L. Wilson.

Philadelphia, October 4th, 1870.

PHOTOGRAPHY AS AN AID TO THE ARTIST.

BY GEORGE CROUGHTON.*

Some apology is needed, perhaps, in introducing such a subject to a meeting composed mostly of photographers, to whom, doubtless, a subject that had more direct bearings upon the principles and practice of photography would be more acceptable. But it is a subject in which I am greatly interested, because, I think, if artists can be induced to commence the practice of photography to assist them in their painting, they will continue from love of it, for all who have mastered the manipulatory difficulties of photography agree that it is almost impossible to give up the practice of it, so great is the fascination exercised by the art over its votaries.

The consideration of photography as an aid to the artist, therefore, is not out of place here, for the South London Photographic Society professes that one of its chief aims is the advancement of artistic photography, and I think there is no better way of accomplishing that aim than to induce every artist to become a photographer. I have tried to make the paper serve two purposes: pointing out at one and the same time how artists may use photography in many ways to lighten their labours, and by explaining, in the course of the paper, some few rules that govern lighting, composition, &c., show how photographers may improve their pictures artistically.

I need not tell you that photography is very largely used by artists, but it is used much more than they will acknowledge. I have known in my own experience more than one instance where it has been used in secret and abused openly. There are artists, and some in high position, who not only use photography as an aid, but have the honesty to own the obligation they are under to it; but they are exceptions; the rule is to use it when wanted, and then speak slightingly of the assistance rendered by it. As an example of this, I have copied a paragraph from the *Art Journal* for January; it is headed, "Drawings by Mr. Piercy," and goes on to say, "At the gallery of Messrs. Agnew, in Waterloo Place, has been exhibited a series of drawings by the above-named artist, which have attracted great and merited attention. They consist of a series of portraits of one family—the family of Mr. Combe, the eminent brewer of Croydon. They are admirably finished, evidencing much labour, although the labour is not perceptible until after examination. Delicately coloured, yet with a singular truth, they are as nearly copies of nature (the children especially) as art has ever produced. Mr. Piercy resorts to photography for the ground of his drawings; he does not, however, paint on the photograph, and is thus freed from the necessity of rigidly following lines that cannot be altered; but he is thus enabled to work with fewer sittings, and, no doubt, secures greater accuracy of likeness. *In a word, he makes photography his slave, not his master.*" Now, although there is such a thing as becoming a slave to photography, as I will try to explain hereafter, this is, to say the least of it, a shabby way of acknowledging the assistance photography has rendered in this case; for there is no doubt that, besides shortening the sittings, photography has aided the artist to give that truthful colouring so much praised. This, at first sight, may seem like claiming too much, but when you take into consideration that, having his drawing, light and shade, and likeness in the photograph, the sittings could almost wholly be devoted to the study of the colour from the original, it will be at once seen that he must approach nearer nature than if he had to study at one and the same time drawing, colour, expression, &c. Still, the paragraph exposes—somewhat partially, perhaps—the manner in which artists have agreed photography should be used by them, not copying all that is in the photograph, because it must have been there when it was taken, but just taking what their judgment and experience tells them is wanted, and no more.

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* Read at a meeting of the South London Photographic Society

Photography to an artist—or, I should rather say, to an art-student—is like fire: in any case a good servant, but a bad master. What is meant by this was expressed in a few words by an artist of some repute to whom I ventured to speak on this subject a short time since; he said, "Photography? O yes; I often use it. Useful? Yes; I find it very useful, particularly for foreground detail; but it must be used with great discretion, for in grasping at the shadow, detail, you are apt to lose the substance, breadth." Of course, to an artist who has passed through all the preliminary studies, there is no difficulty in using photography as an aid, but all artists are unanimous in their condemnation of its use by students, for its use by those who are not sufficiently advanced to stear clear of its errors is, no doubt, greatly detrimental to both breadth and freedom.

The truth of photography has become so proverbial that it would surprise not a few to hear how untruthful a representation can be obtained—of a landscape, for instance, under certain conditions. To a meeting composed, as this is, of practical photographers, I need only hint at the false perspective in pictures taken with a short focus wide angle lens, to explain what I mean. But the greatest disadvantage, and one most apt to mislead an art student, is its tendency in unskilled hands to produce what I have seen called maps of landscapes; and I think they could not have been better named, for each plane, foreground, middle and extreme distances in them are equally sharp and well defined. I have been told more than once, when I have remarked the want of aerial perspective in photographic landscapes, that the sharpness was the beauty of the picture. Another favourite defence is, that it must be as it is in nature, or it would not be there. There is in this assertion a very great mistake: it assumes that a photographic lens produces a picture as seen by the human eye; but it is not so. If you fix your attention upon any one object in a landscape, all others, no matter what their number, or with what amount of detail, are subordinate to it; they are, to use a photographic expression, out of focus. You see them, but not so distinct and sharp as the same objects would appear in a photograph; they are only masses of light and shade and colour, backing up the principal object, and not till the eyes are directed to each individually can you see the detail in them. Now this is what every painter aims at in his pictures, and, of course, it should be the aim of the photographer also, if he wishes to produce pictures instead of maps, that the principal object should attract the attention first, and this is done by keeping all the other parts of the picture in subjection; it is only in the principal passages that detail is made out with anything like distinctness. There is, of course, in every well painted and finished picture a certain amount of detail in every part, but it is only seen when looked for; if details should obtrude themselves in minor passages it would be called out of keeping, and the breadth would be broken. *It is only by a proper subordination of all portions of the picture to the principal object in it that breadth can be preserved.* Now I would ask, how many of the ordinary photographic landscapes fulfil this important condition? I venture to say, not one in ten; on the contrary, generally, there is no principal object; the eyes wander discontentedly all over the picture without finding a resting place, distracted with too much detail. This is the one great fault that artists find with the generality of photographic portraiture.

Photographers are, as a rule, too prodigal of their light; they do not know its value, and they waste it by flooding their picture with it, to the destruction of every quality wanted to secure artistic results.

The principal object in a portrait is, of course, the face, and that should receive the principal light; all other lights in the picture should be *lower in tone as they recede from the face.* In the course of my practice as a photographic portrait painter I have a great number of photographs pass through my hands, and it is astonishing how few there are that are in keeping throughout. Perhaps, in a three-quarter length, where the hands are brought in, either the hands themselves or the lace cuffs are whiter than the face, instead of being lower in tone; the consequence is, that the hands attract the attention first, and when you look at the face, the eyes at the first opportunity drop back to these. Sometimes, at the extreme edge of the picture, the breadth of shadow will be broken by an open book, or something of that sort. Little things, all of which tend to cut up the composition, and so spoil the photograph as a picture.

But I have been led from my subject. But I hope I have said enough to show that if students copy photographs without discretion, they may be led to fritter away their pictures into small details, giving prominence to that which should be kept in subjection, and losing those qualities which alone can make a picture—breadth and keeping.

Having glanced at what may be called the disadvantages of photography, I will now endeavour to give you my idea of its advantages, and I think the latter will far outweigh the former. We have seen how photography has been used as an aid to the portrait painter; in the same manner it may be useful to the figure painter in his studies for pictures of every description; its use will not only save the artist's time, but will also lessen the fatigue to the model, for although it may seem a very simple thing to stand in position to be drawn from, it is, in reality, very fatiguing. It is not only difficult, but almost impossible, for a model to keep up the spirit and action of the position, whatever it may be, for any length of time. This is so well known that in all classes for drawing from the life the masters will impress upon the students the necessity of getting the action in the first sitting, for if not secured then it is almost impossible to get it after, for after standing a very short time, the model getting fatigued, the muscles relax, and the position loses all its reality. Now a photograph could be taken in much less time than it would take an artist to get in his outline, and in it would be all the freshness of action of the first sitting; and if the model is lighted as the artist wants for his picture, he will have at one drawing light and shade and action; he could therefore do with less sittings, and could, as in the case of the portrait painter, pay more attention to the colouring. Then, again, how minutely photography will reproduce the texture of different materials. A series of photographs of various materials—silks, velvets, cloth, linen, &c.—would be a valuable aid to an artist. Some time ago, if I remember rightly, Mr. Hughes stated that one of the drop-scenes in a London theatre, representing a large curtain of white satin, was painted from Daguerreotypes, taken by him for the purpose, which goes far to prove that artists were awake to the advantages of photography as an aid a very long time ago.

To the landscape painter and the sketcher from nature, photography can be made a most efficient aid in many ways; for instance, the photographs of clouds exhibited at the last photographic exhibition in Conduit Street, particularly one case—exhibited, I think, by Mr. Heath—were splendid examples of what photography can do with that class of subject, and almost all the papers had something to say as to their usefulness as aids to the artist. A man must be a very rapid sketcher indeed if he can get in a sky, however roughly, before the clouds have altered their forms and positions, especially if there should be any wind; but the photographer works instantaneously, and the forms are secured, not only of heavy, rolling clouds, but the light drift or sand, with a fidelity which no skill or dexterity of hand could rival, or even approach. The rapidity with which photography can be worked will make it very useful in receiving exceptional effects of lighting. The light changes so quickly that in many cases, particularly in the early morning, a sketcher has great difficulty in getting a sketch before the effects that have attracted him have passed away; but armed with the camera they can be secured at once, and then he may take his own time in getting the colouring, &c. I remember, some little time ago, on the coast of Ireland, coming upon a mass of rock that ran out some distance into the sea. I had seen the same place often before, but never early in the morning. The rising sun just tipt the edges of the rock, bringing the prominent parts into bold relief, and throwing the mass into shadow, the colour of which, being a cool grey, contrasted well with the rosy yellowish tints upon the lights. Unfortunately, I had not a camera with me, and in trying to secure at one and the same time the effect of light and colour, I got nothing; it lasted only a few minutes, and then, when the sun got higher and more round the point to the south, the mass that had been in shadow was in full light. I did the only thing I could under the circumstances: I got in a careful outline and the markings of the rock, leaving the places to memory that had been lighted up, intending to fill them up with the tints from nature the next morning. Then I found that not only had memory deceived me as to the amount of light that had been on the rock at that particular time, but, the morning being clear, the colours were much colder, and altogether it was very different to what I had seen the morning before. With the use of the camera I could have devoted all the time I had to the colouring, trusting to the photograph for drawing and light and shade. This is only one instance out of many that I could relate, where photography would have been of great assistance. The way in which photography produces detail makes it very valuable for foregrounds. No artist can hope, with the most painstaking study, to render groups of brake, ferns, rocks, and grasses with the same fidelity to nature that a photograph does. A series of photographs of trunks of various trees, with the distinctive markings of the bark and peculiarities of shape, &c., would be no slight aid to the landscape painter. In the same way the whole of the tree might be photographed to show the way in which the foliage falls into masses, each different to the other; in fact, it would take up a deal too much of your time to enumerate all the advantages of photography as an aid to the artist.

I will conclude by just glancing at a few of the arguments made use of against the use of photography. One argument is, that its use will tend to make an artist lazy and careless in his drawing, and that it will also tend to the production of more composition landscapes; that is, landscapes composed from different photographs, and painted in the studio without study from nature; that it will make him trust to his photograph, and neglect the study of nature, thereby lowering himself to the level of a copyist. But these are arguments against the abuse of photography, not its use. It must be used to assist his study from nature, not to supersede it; to be made his aid, not his master. But an artist must be very indolent indeed to become the slave of photography. One who truly loves his art (and to succeed it must be the one passion of his life) will neglect no opportunity of studying from nature, for there is more reality in the roughest sketch from nature than in any picture, however much worked upon, done in the studio; besides, an artist is mostly an enthusiastic lover of nature, and it is really a labour of love with him to study nature in her various moods; and if its help will enable him to secure some of her more transient effects better than he could by hand alone, then, I should think, he not only ought to use, but be grateful to, photography as an aid.

LOCAL REDUCTION OF INTENSITY.

BY M. CAREY LEA.*

It will occasionally happen that, in developing a plate and striving to get detail into shadows, there will be some brightly lighted object that will come out with very undesirable rapidity; and it may prove that, instead of having stopped the development at the right point, we have carried it far enough to make this light object too dense, so that, on inspecting the fixed negative, we foresee without difficulty that the object in question will print white and without detail.

As this spoils the negative, in the opinion of all good judges, it is probable that most photographers have tried their hands at repairing the mischief. It is very easy with a weak solution of cyanide, applied with a brush, to quickly thin the deposit. Unfortunately, however, the action is not confined to the object in question, nor to the portion touched by the brush, but it rapidly spreads to the neighbouring parts, and in a few moments the negative is definitely ruined; there is a thinner transparent space made, which spoils the printing.

It occurred to me, about the middle of last summer, that the difficulties in this operation might be removed in a very simple way, and the method rendered useful. This was by simply sizing the film before applying the reducing agent. A trial resulted in immediate and complete success. The mode of operation was as follows:—

A sixty-grain solution of good gum arabic was made, and a few drops of carbolic acid added to make it keep. The negative (if dry) was first well wetted with water, and the gum solution poured upon it, worked in, poured off, a second portion poured on, worked over the plate, and then the plate set up to dry.

The reducing agent selected was perchloride of iron, for which also muriated tincture of iron may be substituted. In either case, the solution is to be very much diluted until it shows a pale straw colour. It is next to be applied on the plate, using a fine, thin, elastic, sable pencil, going over it gently, and with repeated applications, until a sufficient reduction has been obtained; the solution is then to be carefully washed off, and in this washing the gum is also removed. If it be afterwards found that the reduction of density is insufficient, the photographer must on no account attempt to continue it without applying a second sizing, precisely in the same manner as the first.

This method has a real utility. The film, which previously allowed the liquid to spread like blotting-paper, loses this tendency by the sizing, and it becomes easy to keep the application to the exact spot desired. The detail, which had been covered up by excessive deposit of silver, reappears under the reducing agent, and if the operation be nicely managed, a negative previously worthless may be got into excellent printing order.

It seems not improbable that an intensifier might be applied very much in the same manner, and parts too thin to print will be brought up to a satisfactory thickness. This experiment I have not yet made.

NON-ACTINIC BACKING FOR DRY PLATES.

BY M. CAREY LEA.*

The necessity for backing dry plates is now pretty generally acknowledged, and probably nearly all the best dry-plate workers adopt the method. It is, nevertheless, a fact that the desired end is not always attained, and that "blurring" will sometimes appear upon plates that seem to have been well protected.

For example, a mixture of Spanish brown, gum, and sugar has been highly recommended, and I have joined in the recommendation. Yet I have seen very sensitive dry plates thickly coated upon the back with the above mixture give distinct evidence of halation when over-exposed.

I attribute this effect to the presence of a great number of minute pinholes which form in this backing; each lets in a minute pencil of light, and allows a minute internal reflection, and the aggregate of these small influences is sufficient to materially injure the protective qualities of the application.

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* Philadelphia Photographer.

* Philadelphia Photographer.

The true way to test the quality of a backing is one which Major Russell first pointed out, and which I used independently long before I was aware of his recommendation. It is to observe the reflection of a distant candle in a dark room from the uncoated side of a piece of glass. The glass should either be a common piece of blown glass, with the two faces not exactly parallel, or else a very thick plate. The object is to separate as much as possible the two images, the one from the front, the other from the back surface of the glass. Having ascertained by trial with any particular piece of glass that it separates easily and distinctly the two images, some of the intended backing is to be applied, and, before trying it, it must be left to become perfectly dry.

When tested in this way, the coating already described gives faint, but quite distinct, indications of the second image, showing that its protection from blurring cannot be perfect.

Annatto has a certain peculiar and almost greasy character that causes it to give a continuous film on glass, quite free from the minute holes just mentioned. The coat which it affords has, however, a certain want of density when held up to the light. Annatto does not dissolve in water, though it softens when left for twenty-four hours under water before attempting to mix it up; and this should always be done.

It seemed to me tolerably clear, even before making the above-mentioned experiments, that no wholly opaque pigment put on the back of glass could be expected to stop entirely the internal reflections. I therefore tried some experiments with transparent colours. I found my expectations verified, and that with a transparent colour I could wholly destroy the internal reflections; and that, even when this was not completely done, the second image was tinged so strongly with the non-actinic colour of the backing that its presence was wholly unimportant. It was difficult to find the right sort of colours, however. The best proved to be the soluble aniline brown. This gives an almost blood-red coating, which destroys every trace of blurring. When submitted to critical tests, it is the only substance amongst those that I have tried that has done so.

It is very easily used. One part of aniline brown is added to about twenty of hot water, and well stirred up. It does not wholly dissolve; but when ground in a mortar with some powdered gum arabic and white sugar (about three parts of gum to two of sugar), using enough to make a very thick paste, it gives a homogeneous coating. Annatto may be mixed with this if desired, but I have not found it necessary.

Before developing, this backing is easily sponged off. I have carefully examined whether traces of aniline brown in the developing bath injure its action, as this would be a sufficient objection against any application. I find that they do not. But if the coating is put on too thin, so that it runs down to the lower edge, and works round the edge upon the film, this will cause a local insensibility, which does not, however, extend more than a very short distance from the place of contact.

In keeping any mixture for backing plates, it is a good plan to add to it a few drops of carbolic acid to prevent moulding.

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THE PHOTOGRAPHIC EXHIBITION.

The following is a copy of the circular which has just been issued by the Secretary of the Photographic Society. All photographers who have not received a copy will please consider it as addressed to themselves. It may be well that we should call especial attention to the date for receiving pictures, the latest day being the third, not the fifth of November.

9, Conduit Street, London, W.
October, 1870.

Sir,

I have the honour to inform you that the forthcoming Exhibition of The Photographic Society of London will be inaugurated by a Conversazione, open to Members and their friends, to be held at the Architectural Gallery, No. 9, Conduit Street, on Tuesday evening, 8th November, at 7 o'clock.

The Exhibition will remain open during the remainder of the month of November, from 9 a.m. till dusk daily, admission being granted by tickets issued by the Members, or to friends introduced by them on signing the visitor's book.

In order to afford time for properly classifying and hanging the pictures and preparing a detailed Catalogue, it is requested that intending Exhibitors will send in their Works *not earlier than the 1st nor later than the 3rd November* (carriage paid), accompanied by a letter of advice, addressed to the Secretary at the Gallery. This letter should contain the title and description of the pictures, and such other particulars of process, &c., as may with advantage appear in the Catalogue.

I am, Sir,
Your obedient Servant,
John Spiller, F.C.S.,
Hon. Sec.

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INDECENT PHOTOGRAPHS.—THE CASE OF HENRY EVANS.

The following letter, by one of the bail of Henry Evans, appears in the *Standard* of last Saturday; an able leader on the same subject also appears in the same journal:—

The Case of Mr. Evans.

To the Editor of the "Standard."

Sir,—Allow me, as one of the sureties who stood bail for the unfortunate Mr. Henry Evans, and having likewise been present at the trial, to submit to the impartial judgment of the readers of your estimable journal a plain and faithful statement of this remarkable case, in order to enable them to form a correct and unbiassed opinion on the different views in which this affair is regarded by the numerous patrons of Mr. Evans—gentlemen of high standing as artists, students of art, and art-critics, who maintain that there has been a lamentable miscarriage of justice in this case—and Mr. Collette, who, notwithstanding the unimpeachable testimony to the contrary, insists upon representing it as one of the grossest nature that has ever been brought in a court of justice. It would, in my opinion, have become Mr. Collette much better if he had rested satisfied with the result of his prosecution, instead of endeavouring, after the trial, to give the case an aspect which is not warranted by the facts, and to prejudice the public against Evans by presumptuous assertions, as if what he states was the only infallible truth in this affair.

The facts are briefly as follow:—On a certain day in March, a man (who afterwards turned out to have been an informer, employed at the rate of about 3s. a day by the society which has arrogated to itself the office of purifying public morality, for the purpose of inveigling the unawares into the meshes of the law) came to Evans's shop and asked for photographed artistic studies—*i. e.*, nude figures after the living model. Having been shown some which Evans (thinking that he had to do with a *bona-fide* customer) was in the habit of supplying to artists and students for artistic purposes, the man inquired for some others of a different character, whereupon Evans replied that if he meant anything that was obscene he could not serve him, as he did not deal in such articles, and did not keep them. The man then purchased thirteen small carte-de-visite studies, each consisting of either a single nude or partly draped figure, in a position of perfect repose, and by no means indicative of lasciviousness, for which he paid fifteen shillings, which surely is not a price at which obscene pictures are sold. Upon these thirteen photographed life studies a warrant was granted to Police-inspector Brennan; Evans was apprehended, his place searched, and a large number of photographs and prints, consisting of 680 art studies, many of them by R jlander, others bearing the stamp of the Ecole des Beaux Arts de Paris, about 100 with the scale of inches printed for the Ethnological Society, and even about a dozen studies in oil by students of the Life School of the Royal Academy, seized. When Evans was brought before the magistrate at Bow Street, Sir Thomas Henry admitted him on bail to two sureties of £40 each, but Sir Thomas, being informed that among the seized property a number of pirated copyright prints of Messrs. Graves and Mr. Brooks were found, for selling which Evans had been sentenced to a fine to Messrs. Graves of £70, payment of which had never been enforced, the bail was increased to two sureties of £100 each. Meanwhile, a second search had been made by the police at Evans's premises, which brought to light about 170 more art subjects, and sooner than a set of paintings, studies by the famous artist Annibal Caracci, respecting the sale of which Mr. Evans had been in correspondence with the authorities of the British Museum. By a ridiculous and totally uncalled-for application made to the magistrate by the police and the secretary of the prosecution—Evans was about to proceed, having fully understood the bail—an engagement to which I must give a most emphatic denial—Sir Thomas Henry was induced to double the bail. It is, consequently, not true "that Sir Thomas, on the charge coming before him at Bow Street, considered the case so bad that he doubled the amount of the original bail fixed," as Mr. Collette wrongly asserts. When undergoing the usual examination on the question of my becoming bail, I explained to Sir Thomas the nature of Evans's business, as I had known it in all its details for a number of years—his business connection with artists, art students, and men of science, to whom he, as an art critic and a professed dealer in scientific instruments, photographs, and artistic studies, &c., had rendered very great service, and by whom, as well as by myself, he was known as a man of unimpeachable character, utterly incapable of pandering to the morbid tastes and passions of a vicious age.

Mr. Collette must remember the character I gave Mr. Evans personally, as well as with regard to his business. He must also remember what pains he took, first to dissuade me from becoming bail, and then to induce Sir Thomas to reject the opposition to commit Evans to bail; and Mr. Collette must likewise confess that he said so, and proposed, as a compromise privately with Evans at that [illegible], that if Evans would plead guilty, and assist him (Collette) with certain information, which Evans was not in a position to give, as he knew nothing about the matter Mr. Collette was seeking, he, the prosecuting secretary of the Society for the Suppression of Vice, would not only not press the charge, so that Evans might get off with a reprimand—or, at the utmost, eighteen months'—imprisonment, but that he would even urge the contemplated petition to the Home Secretary if Evans would consent to his proposition; and I challenge Mr. Collette to deny these facts if he dare. If Mr. Collette considered the amount of punishment he mentioned sufficient at the time, with the facts before him, how is it that he now represents, in the public journals, the case of Evans as one of the worst; that he now speaks of the sentence being the "severest" that ever was awarded in a prosecution instituted by the society for the sale of so-called obscene prints and books, and that "of the twenty and odd dealers now undergoing various terms of imprisonment on prosecutions instituted by the society, none more justly deserved imprisonment than Henry Evans"? Will Mr. Collette please to enlighten the public on these puzzling and most singular contradictions?

The character I gave Mr. Evans in court is borne out by the petition to the Home Secretary, plainly refuting the allegations brought against Evans by the prosecution and the police, and praying for a remission of the imprisonment which has been passed upon him. In this petition it is distinctly stated that "a principal part of Evans's business for some years has been the supply of life studies to artists for artistic purposes; that the photographic studies produced in evidence against him were taken from the living model and well-known pictures solely for artistic purposes, and that artistic studies, such as were supplied by Evans, have become a necessity with art-students, being less costly to them than the employment of life models." This petition has been signed by 300 gentlemen of the highest integrity, many of them distinguished artists of the first rank, art-critics, connoisseurs of art, &c., whose testimony, singly as well as collectively, as to Mr. Evans's character and the nature of his business, and the pictures which brought him under condemnation, is—to say the least—of somewhat higher repute than that of Mr. Collette; and it is only to be regretted that the petition has not received that response on the part of the Home Secretary (to whom I will charitably suppose it was perhaps not sufficiently strongly recommended by the official into whose hands I had placed it), which, in the view of the many signatures of highly influential gentlemen, by whom it was supported, it deserved. The statements contained in this petition are fully corroborated by the proceedings of the Architectural Association at their concluding meeting of the session, reported [illegible] (Building News, July 9th, 1870, pages 39-40), at which Mr. J. T. Perry, Mr. Phené Spiers and the chairman—gentlemen whom, I dare say Mr. Collette will admit to be as well as, or perhaps, better qualified than himself to pass an opinion on the matter—strongly animadverted on the raid of the police, the wholesale destruction of valuable artistic property, and the ignorance of police-officers of ordinary education to discriminate between works of art and productions that are intended to be improper. Mr. Phené Spiers, in particular, stated at the meeting that he knew Evans and his business well, and had often purchased photographs; and that on one of the Academy [illegible] he found several of the academicians and sculptors complain bitterly of the want of judgment of the police to distinguish between the [illegible] of Holywell Street and those who render service to art. Mr. J. H. Leonard, a gentleman well known in the learned world, whom, surely, Mr. Collette will not venture to class among the "vicious patrons" he is pleased to designate them, of Henry Evans, likewise testified to a long acquaintance and intimate knowledge of Evans's enormous and ever-varying stock of art-studies, and believes Evans incapable of pandering to human vice, or having any such productions in his possession as Mr. Collette insinuates.

To maintain, in face of such ample and unimpeachable testimony, as Mr. Collette does, that there was [illegible] throughout the whole of the proceedings in question [illegible] the definition or description of "artistic studies"; that Evans was convicted on proof of sale of photographs of the "grossest obscenity"; and that this is a "pretence" set up on behalf of Evans, that what he dealt in were mere artistic drawings, and that this my contention, which has been embodied in the petition to Sir Thomas Henry, is "without any foundation," is to say that all the 300 gentlemen who put their signatures to the petition—artists, students of the Royal Academy and of the Society of Female Artists, the president and members of the Architectural Society, barristers, physicians and surgeons—are either the greatest of fools or wilful liars. Does not Mr. Collette himself admit, in his letter of the 7th inst., printed in the Standard of the 9th, "the fact that Henry Evans dealt in works of art"? Why, therefore, does he deny in one letter, and call "a pretence set up on behalf of Evans," what he admits in another? Is that not wilfully confusing the judgment of the public? Another instance, how disregardful of the exactness of his statements Mr. Collette is, will be found in a letter of his to an evening contemporary of the 16th of July last, in which he stated that "the judge who tried the case highly complimented the society in bringing to justice a man who was proved to have been a wholesale dealer for several years in pictures of the grossest obscenity." Nothing of the kind was proved; the statement is as incorrect as that of the bail. Mr. Evans was convicted—and Mr. Collette cannot dispute so much—solely on proof of the sale of thirteen artistic studies, which were considered to be indecent by an informer employed by the Society for the Suppression of Vice, for the purpose of inducing Evans to commit an act which their prosecuting secretary succeeded in making out as criminal. No proof of any other or previous sales of such pictures was offered, nor was any proof brought forward by either the police or the prosecution of Evans having been, as alleged by Mr. Collette and Inspector Brennan, "a wholesale dealer for several years in obscene pictures." The severity of the sentence passed on Evans is to be accounted for by this unfounded and unproved assertion, and the further statement of Inspector Brennan, equally unsupported by proof, "that Evans was in the habit of sending such things to small dealers, who were to select what they wanted; that Evans was so artful in his trade that up to the present time the police, although policemen in plain clothes had been employed to watch the house for two months, had been unable to detect him (from which ordinary minds would conclude that no business of the kind as stated was done, or that the policemen must have been very careless in their vigilance); and furthermore, that there were a few prints on the walls of the shop and a few philosophical instruments on the sides, but which were kept there merely to serve as a blind to screen the nature of the trade that was carried on inside." Why was not one of the "small dealers" brought forward as a witness, or a copy of the "catalogue" produced at the trial to support this statement? In the letter already alluded to Mr. Collette asserts that "there were no oil paintings nor sculpture by Annibal Caracci." The fact that they were in the shop at the time of the seizure of the property, and that they were not there when the police gave up possession of the premises is equally true. Now, the enquiring public, like myself, I think, would like to know what has become of them, and how their disappearance is to be accounted for? Mr. Collette says in his letter that he had "fortunately preserved some photographs of paintings." May I ask for what purpose? And by whose authority, I should like to know, has Mr. Collette "preserved photographs of paintings," and "retained a sample of the seizure made by the police in this case," when he himself states that "the presiding judge gave special directions that the stock seized should be destroyed, no such directions having been given before in any case"? If no such directions have been given before in any case, what, then, has become of the seizures previously made in such cases? Has, perhaps, Mr. Collette also "preserved" them?

The question of the pirated copyright prints of Graves and Brooks has nothing to do with Evans's conviction. The fact that they were found on his premises is not denied, and we candidly regret the circumstance, for which I make no excuse for Evans. It will, however, perhaps, be satisfactory to Mr. Collette, as well as to others, to learn that Messrs. Graves and Mr. Brooks have both shown the greatest leniency towards Evans. It having been the first prosecution of the kind which Messrs. Graves instituted, they did not wish to ruin the man, and did not, therefore, enforce the payment of the fine, for which they kindly allowed Mrs. Evans time till she could [illegible] benefit of that liberty, which was done a few weeks since.

As regards Mr. Brooks, I consider it a duty thereby to thank that gentleman publicly, on behalf of Mr. Evans, for the forbearance and sympathy shown to him. Mr. Brooks had even volunteered to be present at the trial and give a professional opinion on the specimens seized. But the unfortunate circumstance that we were led to believe that the trial would come on at two o'clock in the afternoon, whereas it took place at ten in the morning, deprived Mr. Evans of the testimony of a most valuable witness.

Apologising for the length of this letter, I have the honour to be, &c.,

17, High Street, Wandsworth, Oct. 10. JOHN MILTON.

We make the following extract from the article in the *Standard*:—

It is, of course, impossible to say a word in extenuation of the crime for which Evans is now suffering. He stands condemned as a common offender, not only against the law, but against every ennobling attribute of human nature. If guilty, he well deserves punishment as a mercenary and unscrupulous disseminator of moral poison, anxious only for his own filthy gains. But the more severely we condemn the crime, the more uneasy will every right thinking man feel at the existence of what seems to be a well-founded apprehension that the supposed criminal has not committed it. The material consequences of his sentence are heavy enough, but the ineffaceable stigma, the hopeless and unendurable ignominy which it involves, are more terrible still. And if, being innocent, all these have been heaped upon him, his fate is, indeed, fearful. Yet it seems to us that, making all due allowance for conflicting statements, there is only too much reason to fear that justice has wholly miscarried. The prosecution against Evans was conducted by the Society for the Suppression of Vice, of which Mr. C. H. Collette, its attorney and secretary, says that for thirty years it has neither failed in a single prosecution nor come under public censure for having commenced one harshly and injudiciously. We are not concerned to dispute either of these assertions. Nay, more, we may supplement them by reminding our readers that the Reverend Ordinary of Newgate very recently commended the Society to public support, on the ground of its efficiency in checking forms of immorality which are the frequent parents of crime. But by Mr. Collette's own admission, the fact remains that the public have a right to watch voluntary organisations of this sort with jealous suspicion. The objects of founders and managers may be excellent to a degree, but it is scarcely possible to escape occasional reproach through the misguided zeal of subordinates, who get so habituated to ferreting out offences that "trifles light as air" seem to them "confirmations strong." We do not presume to say that prosecutions for which an influential society with a high-sounding title is responsible cannot have been commenced without good reason.

Correspondence.

DRESS AT THE PHOTOGRAPHIC *SOIREE.*

Sir.—The "Old Photographer" has mentioned a matter which I think of very great consequence to the success of the exhibition meeting of the Photographic Society. The attendance at the meeting depends a great deal more on the question of dress than would at first sight appear. Previous to last year it had been the rule to consider the *soirée* as one of the ordinary meetings of the Society, and photographers were not expected to come in evening dress; but last year I was horrified to meet in the hall an attendant who asked my name, that he might shout it to the president, who, dressed in full evening costume, was standing in the entrance to graciously receive the members and visitors. This was very good and kind of the president, but it implied *full-dress*. Now I, thinking I knew the custom which prevails at the meetings, was apparelled in a shooting jacket. The absurdity of ceremony in such a garment struck me so forcibly that I felt compelled to refuse my name.

If this sort of thing is continued it will go far to spoil the meetings. It is not every photographer who is possessed of that curiously bifurcated article a dress-coat. I am proud to say I am the happy possessor of one of these singular garments, but I should regard myself rather in the light of a "snob" if I put it on to mix with, and make envious, my jacketted, but, for all that, none the less talented brethren. Let us hope that members and their friends will be allowed to attend the meeting in comfort, and without being made to feel ill at ease on account of their attire. A Member.

THE CASE OF HENRY EVANS.

Sir.—Your last impression contains some extracts from a letter addressed to the *Standard*, signed "J. H. Lamprey," in connection with the above case.

Owing to the similarity in the name (the difference in one letter being attributed to a typographical error) I have, in consequence, been subjected to much annoyance and inconvenience, and I shall, therefore, esteem it a favour if you will, in justice to me, permit me to state that Mr. J. H. Lamprey is in no way connected with or related to me. In fact, I do not know him, nor am I, or have I been in any way, directly or indirectly, connected with the case in question.—I am, sir, your obedient servant, Thomas Lampray.

57, *Gaisford Street, October* 17th, 1870.

[The name of Mr. J. H. Lamprey is well-known in the scientific world; but we willingly permit this explanation if our correspondent is likely to suffer in a business sense from the possible misconception.—Ed.]

REVOLVING BACKGROUNDS.

Sir,—In the American Correspondent's letter of October 7th I see mentioned a "circular background," and credit given to a Mr. E. W. Moses, of Atlanta, as being the promulgator. It is not my intention to rob this gentleman of any laurels that may be due to him, but simply to mention that I made a similar background in 1868, and have modified it and used it ever since. The modification is as follows:—Instead of its being a circular background, it now only works half-way round, or less as the case may be, by a pendulum. It is made with four arms, about four inches apart, graduated with a light colour (or a darker one than the background) from the bottom to the colour of the background at the top. Thus, by setting it in motion, you get a graduated shadow on one side of the head, and thereby save time and trouble in "working" the negative during printing.

If you think this information of sufficient interest to your readers, you will, by inserting it, oblige.—Yours truly,

W. R. Holyoake.

45, *Westbourne Grove, Bayswater, October* 15th, 1870.

Proceedings of Societies.

South London Photographic Society.

The usual monthly meetings of the above Society were resumed on Thursday, October 13th, at the City of London College, Leadenhall Street, the Rev. F. F. Statham, M.A., president, in the chair, who expressed himself much pleased once again to meet the members after the recess, and trusted that the future meetings of the Society would still retain their character for so much that was instructive and pleasant in their sittings.

The Secretary then read the minutes of the last monthly meeting, together with a minute of the open-air meeting, which, having been confirmed,

Mr. G. Croughton read a paper entitled "Photography as an Aid to the Artist" (see p. 498).

The Chairman then made a few remarks, in the course of which he said that although the subject was not new, yet Mr. Croughton had contrived to say something new; as also he could see that, whilst the advantage to the artist in the use of his pencil was in selection, the camera of the photographer would take in the whole of the subject, and that whilst the camera might be used to supply hints, it would not supplant the use of art which is in the eye and fingers. By the camera the artist could multiply his sketches, more especially in atmospheric effects and objects containing detail, as in architecture; and that it was folly on the part of any one to say that photography was not to be imported into art, which should not rest solely on the past, but should make use of all modern improvements. The Autotype Company had done much in multiplying original sketches by eminent artists; so that artists need not to be slaves in doing all by the work of the hands, but might be perfectly justified in using all mechanical means to the saving of mere manual labour. In conclusion, he drew a picture of the great advances made in photography since 1856, and hoped that in another ten years the advance would be still greater.

Mr. Edwin Cocking thought that one reason why artists generally seemed to ignore photography arose from the position which, in its early days, it appeared to assume; viz., that of being something very superior to and over-riding the productions of the educated artist, who had devoted years of close labour to the educating of the eye and hand to copy visible objects; as also that any artist who finished up, however well, a photograph by painting upon it, was completely absorbed and put out of sight by the photographer; and although, at the present time, many who possessed a latent talent for art had, by bringing to bear upon photographic productions a great amount of skill and study, and had thereby shown that the art science was capable of more advanced artistic expression; yet it would take some time before the artist would accord to photography that position which it was so justly entitled to claim as a great aid to his study and practice.

The discussion then assumed a more conversational character, and, after passing a vote of thanks to Mr. G. Croughton, the meeting was adjourned.

Talk in the Studio.

The Carbon Process on a Large Scale.—We hear from various quarters the highest encomiums on some unusually large and fine autotype reproductions by Messrs. Sarony and Co., of Scarborough. We hope shortly to see copies, and will then refer to the matter further. In the meantime, it may interest our readers to learn the following particulars. One of the pictures consists of a fine group of the Committee of Relief during the Manchester cotton famine, the portraits having been produced and combined by Mr. McLachlan. The reproduction is from an enlargement finished in oil. The other also consists of an open group by Mr. Barraud, entitled the London Season. The negatives are respectively four feet by two feet, and three feet nine inches by one foot seven inches; and we understand that negatives and proofs were produced within three hours of the receipt by M. Sarony of the original pictures, and the work, from what we hear, is fully worthy of the high reputation of Mr. Sarony. The *Times*, referring to the latter pictures, says:—"It cannot be denied that the autotype process has succeeded admirably in detailing the minute features of the several portraits, with a faithfulness not attainable, or, at all events, not attained by the engraver; and it is to be hoped that time will show that its promise of being permanent is borne out by the result, although we understand that expert chymists and other judges are confident in that property."

Photography Amongst the Ruins.—The correspondent of a daily contemporary says, speaking of the ruins of Strasbourgh:—"One is surprised that no photographers are at work to perpetuate the scenes of the bombardment. Their sale would be enormous. But I am told there has been an exclusive concession of the privilege to one person. It is probable the rough and ragged edges of the scene will be smoothed away before the artists are ready, as gangs of labourers are hard at work clearing away the chief unsightlinesses." The photographers for this task were appointed by the Prussian Government, and sent from Berlin."

The Forthcoming Eclipse.—We (*Nature*) have great pleasure in announcing that the American Government have voted £6,000 for the expedition which will be sent to Spain and Sicily to observe the coming eclipse. It will be in the recollection of our readers that our own Government have refused to give either a single ship or a single shilling in aid of our own observations: as we said before, comment is useless.

To Correspondents.

One who is Saved.—We are obliged by your good wishes and good advice. We cannot, of course, enter into the question in these columns.

Cymro.—We regard the use of ammonia for neutralizing the negative bath as a serious error, for two reasons: in the first place, it is very difficult with ammonia to neutralize with sufficient nicety; and, further, because with nitrate of ammonia present, oxide of silver is held in solution, and the bath soon fogs. The best mode of neutralizing a bath is to add a few drops at a time of a 10-grain solution of carbonate of soda, shaking between each addition, and adding until there is a slight permanent turbidity. Then sun if opportunity serve, and then filter; if not, filter at once, and try the bath before adding any acid.

Kent.—When the contributions are sufficiently plentiful to exercise the selection you suggest, we have no doubt it will be done. In the meantime, the position of hanging and the public verdict will pretty well mark the excellence of contributions.

W. W.—In the reference to the quantity of hyposulphite necessary to fix a given quantity of paper, the salt is meant, not the solution. 2. In all allusions to weight, ounces and grams, apothecary's weight is meant, in which an ounce consists of 480 grains. 3. The developer you mention is a very suitable one for portraiture. It is of moderate ordinary strength. The proportion of alcohol is a little greater than is necessary. 4. The fixing solution may be kept ready made without fear of deterioration.

W. E. Martin.—There are various precautions you may employ to keep the plate from drying during long exposures. An important condition is the use of a thick but porous collodion. If a horny, repellent collodion be employed, it soon dries. It is well to use a fully bromized collodion, and allow it to remain a short time in the bath. Also place wet blotting-paper at the back of the plate. 2. You will find a series of articles on photolithography in our Twelfth Volume, also an article in our Year-Book for 1867.

W. F. Morgan.—The exhibition will be opened on the evening of the 8th of November.

Aleph.—We will give the question some attention, and if we solve the difficulty, will let you know. At present, the fact is new to us.

Amateur.—We will consider your suggestion. The general subject has not, we think, been so much neglected as you imagine. A good portrait lens has its chemical and visual focus coincident, and if a photographer have a lens defective in this respect he cannot himself correct it. His only remedy is to allow for the difference between the two foci. The difference will vary for each difference of distance between the object and lens; but the notion that the difference varies with different kinds of light is not entertained by practical men. If there be such difference, it is not appreciable to the eye. Of this you may easily satisfy yourself by taking a picture in the camera by sunlight, and by artificial light. You will not find any appreciable difference in the sharpness. The notion that the image given by a lens with the foci non-coincident possesses more relief is also a fallacy, except so far as it may depend upon the existence of a diffused focus.

Y. Z.—We have no knowledge of any method whereby you may attain your end, except by writing and asking either the maker or a second-hand dealer if he can oblige you in the manner named.

Tyro.—You will find it desirable to adopt our recent advice to another correspondent, and add the nitrate of soda and sugar in proportion to the water added. This should be always sufficient to make up the original quantity of bath, the silver being added in proportion of an ounce of nitrate to each quire of paper excited.

T. N.—Matt stains at the corner of the plate generally arise from the free silver solution having come into contact with the inner frame of the hold, which is not quite clean. Take care frequently to wash the inner frame with clean water; and always allow the plate to rest on, and to come into contact only with, clean blotting-paper. 2. For transparencies a good negative developer will serve. Your nitrate bath must be in good condition. You may use a 15-grain iron developer with about 30 minims acetic acid; or a pyro developer, containing

Pyrogallic acid	2 grains
Citric acid	1 ounce
Acetic acid	15 minims.

M. M.—There are various recipes for such a varnish as you desire, but they are generally given in vague and general terms. The chief bases of these varnishes is Canada balsam or Venice turpentine dissolved in benzole. A mixture of gum elemi and white wax is sometimes used, and we fancy such a medium has been used in the example enclosed. Take a couple of drachms of gum elemi, a drachm of oil of spike or oil of rosemary, and about half an ounce of benzole; dissolve and filter. Then take a couple of drachms of white wax and melt in a jar by means of heat (over a water-bath is best); then, whilst the wax is melting, add the other and mix. To use this it must always be melted by heat, the print placed in it, and then placed on the glass, which must be made hot. Press away all excess of the mixture, and place under a weight to cool. See Mr Briggs's article in our Year-Book for 1869 for hints in manipulating.

Operator.—The best method of producing enlargements on canvas is that we described a few weeks ago, in which collodion is transferred to the canvas. The image can be produced by either artificial light or sunlight. If this method does not suit your purpose, write again.

Half Mad.—Your collodion has become decomposed, and is, we fear, useless, except for adding to new collodion to hasten its seasoning. As port wine will spoil if kept too long, or if not a good vintage, so collodion will spoil if too long kept, especially if it were not made suitably for keeping. *Properly made* collodion will generally keep twelve months or more with advantage. The solution of the film is not the fault of the varnish, but of the decomposed collodion. Mixing of the collodion is the best thing to do. If the film show any tendency to dissolve with the varnish, a coating of dilute gum-water is the best remedy. The tricks to which you refer are rarely due to the varnish, of which there are many good samples in the market.

Clement Rogers.—Many thanks. It shall appear in our next.

J. B. (Lincoln).—The card marked A is undoubtedly the best, but the negative of it has been over-intensified.

G. Crouohton.—Thanks.

J. M.—Received. Thanks. Shall have attention.

A. B. Almoner (Nova Scotia).—The enamel paste has duly arrived. We will examine it and report.

Dr. Vogel.—Received. Thanks.

J. R. Griffiths sends us a card photograph of a bunch of white currants as an example of the plain photographs he exhibited at Cardiff, and expresses a conviction that local photographers better perform their duty by contributing than by criticising the contributions of others. Our space is too much occupied to permit us to open a discussion on such a subject. The card sent is a very charming little picture, the fruit and leaves being well arranged and admirably photographed. We shall have pleasure in seeing the other examples.

J. Cunnington.—In our next.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 634.—*October* 28, 1870.

CONTENTS.

PAGE
Reproducing Negatives from Prints.—Collodio-Chloride Negatives ... 505
Specimens of Operators ... 506
Photographic Piracy and Copyright ... 506
Photographic Records of Solar Observations ... 507
The Photographic Exhibition ... 508
Foreign Miscellanea ... 508
Photography for Recording Artillery Experiments ... 509
Negatives from Negatives. By Wm. Blair ... 509
Washed Sensitive Paper ... 510
The Simpsontype or Collodio-Chloride Process ... 510
Photography at the Derby Fine Art Exhibition ... 511
Correspondence.—Alleged Photographic Piracies of Copyright—Informers and Pirates—Operators' Specimens ... 512
Proceedings of Societies.—Manchester Photographic Society ... 514
Talk in the Studio ... 514
To Correspondents ... 515
Photographs Registered ... 516

REPRODUCING NEGATIVES FROM PRINTS.—COLLODIO-CHLORIDE NEGATIVES.

There are few things which would be more desirable to photographers than a simple, easy, and certain method of reproducing negatives; but hitherto, with rare exceptions, all reproduced negatives we have seen have been unquestionably inferior to the originals. As a rule, the reproduced negative has been flat and hard; it has lacked at once modelling, delicacy, and brilliancy. From some cause, difficult to trace, there is generally a loss of gradation; there are fewer tones in the picture; the delicate half-tones which surround points of high light in the original are lost; high light, and the tender tones surrounding it, are merged into one grey tint; and, in like manner, the reflected lights and half shadows are merged into each other, and lost in masses of black if the picture be brilliant, or of grey if the aim have been to keep the picture soft. In another column, Mr. Blair gives details of some interesting experiences, and sends us a good example of the result produced. The subject is an architectural one, and the reproduced negative was double the size of the original. The result is very good, the definition satisfactory, and Mr. Blair assures us that the picture is more harmonious than that from the original negative.

We have recently had an opportunity of examining, in the photographic department of the Royal Arsenal at Woolwich, some of the most perfect reproduced negatives we have ever seen, which had been obtained from the most unpromising source which can be conceived. The originals were a series of ten by eight prints in the last stage of fading and jaundice. They were views in the Crimea during the war, the whereabouts of the negatives of which was unknown; and, as copies were required, it was necessary that they should be, if the feat were possible, reproduced. We must confess that we should have regarded the task as too hopeless for an attempt. Fortunately, Mr. Pritchard and the skilful artillerymen who conduct the photographic operations at the arsenal, had enterprize to try, and they have succeeded to a marvel. The faded yellow prints were unmounted, and washed, to remove the adhesive material. They were then dried and waxed, to render them transparent, as calotype negatives would be treated. These faded prints thus treated were used as the transparencies from which the negatives were to be printed. The negatives were produced from the transparent prints, not in the camera, but by contact printing on collodio-chloride of silver, the simplicity of the operations only being exceeded by the perfectness of the result. We will proceed briefly to describe the details of the method employed

The collodio-chloride of silver employed was a sample prepared by Mawson and Swan, which had been mixed six months, and had become much discoloured, but was found to be none the worse for actual use. To secure perfect adhesion the plates were coated with very dilute albumen, the white of one egg in about eight ounces of water being employed. The prepared plate having been coated with the collodio-chloride, the sensitive surface, after drying, is fumed with ammonia. A very simple and efficient method of fuming is adopted. The plate is held over the mouth of a bottle of strong liquid ammonia, and moved about until the whole surface is brought in contact with the fumes. The completeness and evenness of the result is easily seen, as the surface of the sensitive film, which is bright before fuming, becomes dull after that operation. The waxed print is then placed in contact, and the plate is exposed and very deeply printed, the time given being about three times as long as would be given for an ordinary print. The image so produced possesses all the detail of the original, but lacks printing force as a negative. This is obtained by means of an intensifying solution similar to that occasionally used for developing collodio-chloride pictures. The solution is prepared as follows:—

Gallic acid	75 grains
Acetate of lead	50 ,,
Acetic acid	2 drachms
Distilled water	20 ounces

This solution should be filtered, and a few drops of a twenty-grain nitrate of silver solution added just before use. The solution is applied to the plate in the dark room, just as in the wet collodion process. The image will be seen gradually to acquire intensity; but it must be borne in mind that the image, when dry, is much more vigorous than when wet, and also that it possesses a very non-actinic colour; hence care must be used not to over-intensify. The plate is finally washed, and fixed in hyposulphite as usual.

The printing quality of the negative thus produced is unusually fine, the proofs produced being at once delicate and brilliant, full of detail admirably defined. They are, it is scarcely necessary to say, infinitely finer than the faded prints from which the negatives are produced; but it may seem paradoxical to say that they are probably finer than the original prints ever were, as, with the same detail, they seem to possess more vigour than the original prints have ever had. One circumstance is very curious and interesting. In some of the original prints the extreme distance consists of a sea represented in the prints by a faint, uniform flat tint of faded grey, with a few specks and irregularities in the tint Oddly enough, these specks and irregularities, without form or suggestion in the original, are found in the prints from the reproduced negatives to be shipping, with masts and cordage well made out.

Altogether, this is the most promising experiment in the reproduction of negatives we have met with, and suggests that collodio-chloride, printed in contact with good transparencies, and then intensified, gives the greatest promise of success in this direction. To attain perfect satisfaction, the same experiment should be tried with portraiture, which is the crucial test in such matters. Many of our readers will have an opportunity of forming an opinion for themselves of the results of which we have been speaking, as Mr. Pritchard will bring the subject, with examples of the work in question, before the Photographic Society of London on an early occasion.

SPECIMENS OF OPERATORS.

A correspondent in another column calls attention to a somewhat curious difficulty and grievance to which operators are continually subject. In advertisements for operators it is the custom, natural and almost universal, to require that specimens shall accompany the application. It is also the custom, quite as natural and almost as universal, of employers to forbid operators to appropriate prints done in the establishment, and such appropriation in defiance of permission would certainly, in many instances, submit the operator to the risk of a criminal prosecution. Our correspondent, who signs himself an "Unemployed Printer," asks what an operator is to do under those circumstances. His experience leads him to the conclusion, that a request made by an operator to his employer to be permitted to take specimens from some of the best negatives would, instead of securing the permission, issue in immediate dismissal from the establishment. The operator cannot, of course, claim such a specimen as a right, and he risks his character and liberty if he take them surreptitiously. The case certainly seems a hard one.

There are difficulties also on the employer's side. His objection to his assistants taking specimens may be based on various grounds. In the first place, the use in this way of portraits of private persons may often be offensive to the sitters, and many portraitists are very scrupulous in not allowing a copy of a portrait to leave their establishments without the express permission of the sitter. In other cases, where there is division of labour, the principal of an establishment may say: I object to my operator showing the photographs produced in my establishment, because, in truth, he is in very slight degree responsible for its qualities. I prepare all solutions myself, I arrange the lighting of my studio myself, and superintend everything myself, so that, no matter whose hands produced the actual specimen, I am responsible for it. These and similar arguments are used by some employers.

The desire to see examples of an operator's work, or a printer's work, before engaging him is very natural; but it is by no means of the vital importance which some are disposed to think. When an assistant, desiring an engagement, shows the choicest specimens, there is no guarantee that he produced them. He may have bought them, may have had them given to him, or may have obtained them by less direct means. If they are really good, they are at least an indication that he appreciates good work, but afford no proof that he can produce it; so that, as a rule, their possession by the operator is of less value than at first appears. Probably the best solution of the difficulty would be found in employers permitting or assisting operators to produce, on some suitable disengaged occasion, one or two negatives for the express purpose of obtaining specimens. If an operator or printer had a good negative of himself, and, if possible, of some female model—wife, sister, or friend—who might be willing to sit for him, a few specimens could always be produced from such negatives to meet the difficulty. Few employers would refuse permission, on proper occasion, for the production of such negatives; and, by judicious forethought, an operator or printer might obtain such a variety of negatives as should fairly meet all legitimate demands for examples of his work and capacity.

PHOTOGRAPHIC PIRACY AND COPYRIGHT.

In referring in our last to what appeared to be a serious miscarriage of justice in the conviction of G. W. Knight for piracy on apparently very insufficient evidence, we added that the accused was somewhat responsible for his fate, inasmuch as he had incurred voluntary peril, and shown sympathy with piracy. A letter which appears on another page, which was intended for insertion in our last, more fully explains, and endeavours to justify, the motive. The ruse by which the complainant, in his eagerness to prosecute pirates, was to be led into a losing case, was counselled by Mr. Cunnington, and it is to this gentleman we are indebted for some statements on what he conceives to be the illegal claims to copyright in many of the pictures for the piracy of which several prosecutions have been successfully instituted during the last few years.

The general argument of the letter is to the effect that copyright in paintings can only be acquired by a strict observance of the provisions of the Fine Art Copyright Act, and that as, in relation to many of the pictures for the piracy of which proceedings have been taken, the provisions of the Act have not been observed, there is no copyright, and they are, in fact, so far as the production of copies is concerned, public property. Copyright, he premises, is not property in the usual sense, the right in which would be maintainable at common law, but a privilege conferred by statute; and as this privilege confers a monopoly on an individual to the disadvantage of the public, the steps prescribed by the Act as the condition of such a privilege should be strictly enforced.

The legal value of this argument cannot be determined quite absolutely by any lay opinion; but we remark, at the outset, that it scarcely represents the whole facts of the case. It is by no means admitted that copyright is simply a privilege. To the moral sense of all persons of unbiassed judgment the property of a man in his own ideas is the most absolute property he can possess, and whether the law protected him in the possession of those ideas or not, he would not be less rightfully the owner. Such a view has, indeed, been held by many jurists, some maintaining that copyright existed at common law before any statute on the subject was passed, but was merged in the statutes afterwards, whilst Mr. Justice Erle has held that authors have still a property at common law as well before the statute as after it, and that copyright is not a privilege, but a property. Whilst such views as these are held by eminent legal authorities, and are, at the same time, accordant with the moral sense of mankind, we fear that those who are keen to take advantage of every doubtful technical loophole in the title of property, to appropriate a portion of it by means of piracy, will not secure much sympathy. Whether all the pictures to which our correspondent refers are protected by the provisions of the statute of the 25th and 26th Victoria, or not, we cannot say; if they are not, any convictions secured under that Act in relation to such pictures are clearly illegal. But even in such a case, whilst the victim would have a claim to redress, he would scarcely secure sympathy. He who pleads that he copies a picture, and appropriates a portion of the owner's beneficial interest in it, simply because the legal protection of his copyright is incomplete, would seem to be in the position of a thief who should plead the insufficiency of the fence which protected his neighbour's garden as a justification for filching his neighbour's fruit. The idea or design of a picture belongs to the author until he sells it, and after that to the person who has paid money for it; but it can in no case belong to the pirate who has paid nothing for it, but who persists in copying such design without permission. The neglect on the part of the rightful owners to comply with the provisions of the statute limits the facilities for legal remedy against piracy, but it in nowise alters the moral question.

As regards the special copyright claims of the various pictures referred to in the case in question we can offer no opinion. We may remark, however, that the amount of ingenuity displayed by our correspondent in endeavouring to place the claimants in a dilemma as regards the basis of some of the copyrights, suggests that the claims are not quite so groundless as he desires to represent them. He maintains that a work of art which is a copy of another work of art is not entitled to copyright under this Act. It is applicable to *original* works of art, and he maintains that a work of art cannot be both an original and a copy. At first sight this is plausible enough; but it is, nevertheless, by no means so certain as he states. A painted copy of a painting cannot, of course, be an original; but an engraved copy may be an original engraving as well as a copy of the painting. So a photograph of a painting may be an original photograph of the painting, whilst a copy of that photograph would fail to be original. Original photographs of Raphael's cartoons have, for instance, been issued, and also copies from these, which are not original. Any photograph of a painting or engraving taken direct from the picture is clearly an original photograph of that painting or engraving, whilst a photograph from this photograph is not an original photograph, and is, as a rule, sensibly worse than the original. This being so, we conceive that no strained construction of the law is required to give the first photograph of a picture a legal copyright under the Act. Copies made from that photograph would be piracies, but other copies made from the picture itself, if no copyright existed in the picture, would not be piracies, and these might, in their turn, be protected from copyists.

On the subject of registering every negative taken from a picture we are entirely at issue with our correspondent. The copyright in a photograph, whether from nature or from a painting, is in the photographic rendering of the design; and as the design must be the same, whether the copy be large or small, whether one negative or fifty be taken, it is only necessary to register one negative. In the case quoted by Mr. Cunnington—Maul *v.* Gass—the circumstances are altogether different. The photographs in question—copyright in which it was alleged had been infringed—were portraits of the Duke of Cambridge, taken from life. As in each sitting a different expression or a different position would almost inevitably be produced, registration of each negative became imperative. No such differences as are produced by changes of position and expression and position in a living model can exist between the various negatives taken from a picture, and no such duplication of the registration can be necessary.

How far Mr. Cunnington is right as regards the non-application of the provisions of the Act 25th and 26th Victoria to the pictures in question, as we said, we cannot determine; but, legally protected or unprotected, we regard all photographic piracies as morally wrong, not merely injuring the owners of the pictures, but casting an injurious stigma upon photography and photographers. But we repeat, nevertheless, our condemnation of the mode in which, judging from the report, the case for the defence was treated. Unfortunately, the bad odour into which frequent piracies have brought photography seems to have created an impression that photography and the photographer *must be* in the wrong. Mr. Knight appears to have been convicted on the weakest and most insufficient evidence, and his defence both cut short and discredited. And whilst we cannot admit that the statutes should be strictly construed on the ground that copyright is a privilege accorded to an individual in antagonism to public advantage, we can readily admit that, in proportion to the odiousness of the offence, the evidence should be carefully weighed, and the statute, being penal, most carefully construed. We must also further repeat, that the practice of employing agents or informers to tempt men into breaches of the law, in order to bring them under its penalties, appears to us a practice which not even the plea of self-protection against pirates can render respectable.

PHOTOGRAPHIC RECORDS OF SOLAR OBSERVATIONS.

We have been favoured with the following letter from Professor Henry Morton, with enclosure of some advanced extracts from the forthcoming number of the *Journal of the Franklin Institute*, and some admirable photographs of remarkable spots on the solar disc.

Hoboken, N.J., October 6th, 1870.

My Dear Sir,—I send you herewith a copy of a letter which I have just received from Prof. C. A. Young, of Hanover, New Hampshire, who, you will remember, made, during the eclipse of August, last year, that beautiful determination of *first contact* with the spectroscope. I received with this letter two negatives of solar prominences which show the forms and character of the objects with as great distinctness as I remember them to have possessed to the eye when looking through the same instrument during a visit to Prof. Young last August.

I have now upon my table an extended paper on the subject of the instrument used for this purpose, and its performances, which, as soon as it is printed in our *Journal of the Franklin Institute*, I will send you, with electrotypes.

You will be interested to know that of our last year's eclipse party, Profs. Young and Pickering, and also Mr. O. H. Willard, the photographer of our Burlington section, whose work you have so much admired, are going to Spain in the new Government expedition, which has been fitted out for the coming eclipse of December 22.

A fine telescope by Alvin Clark and Sons has been provided for Mr. Willard, and Mr. Zentmayer is now busily engaged on various new polarization instruments for Prof. Pickering.

Mr. Chapman, who has been engaged for some time with Mr. L. M. Rutherford in his star and sun photographs, will also accompany the expedition. I enclose, by the way, a couple of the sun pictures made by this gentleman during the last summer. In our coming Journal a very beautiful series, showing the changes which took place in a large and remarkable spot from the 19th to 26th of last month, will be published.

Photographs of Protuberances on the Sun's Limb.

Dartmouth College, Hanover, N.H., Sept. 28, 1870.

My dear Sir,—I write to tell you that this afternoon, with the help of Mr. H. O. Bly, our photographer, who has assisted me in the matter with great skill and interest, I have succeeded in obtaining photographs of protuberances on the sun's limb, of which I enclose a specimen. They were obtained by attaching a small camera to the eye-piece of the telescope and opening the slit somewhat widely. We worked through the hydrogen line near G. As a picture, the little thing amounts to nothing, because the unsteadiness of the air and the mal-adjustment of the polar axis of the equatorial caused the image to shift its place slightly during the long exposure of three and a half minutes which was required, thus destroying all the details. Still, the double-headed form of the prominence is evident, and the possibility of taking photographs of these objects is established. Success will depend upon the use of more sensitive chemicals (those used to-day were such as are ordinarily employed for portraits), and a very careful adjustment of the equatorial axes and the clock-work. I fear a telescope of much larger aperture than mine will also be found necessary, in order to produce pictures that will really give much of an idea of the form and texture of these beautiful clouds. I may add, that between 3.50 and 4.30 o'clock this afternoon the umbra of the spot upon which I made the observation of the sodium lines, as communicated to you a few days ago, reversed the following lines (ranged in order of brightness), viz.: C, F, D_3, 2796 K, (Hyd. γ), b_3, b_1, b_2; D_1, D_2, *h*, b_4, and 1474 K. The brightness of b_3 was remarkable. Another spot, just south of this nucleus (which was the most southern of four in the same penumbra), also reversed the hydrogen lines very finely, and on opening the slit a little, it was found that the phenomena was caused by two enormous protuberances or luminous clouds, which in the spectroscope shone brightly even upon the surface of the sun. Their form could be distinctly traced. At 4·05 it was as given below: the right-hand one terminated in or close to the nucleus of the spot; the other and larger, in the penumbral region. The whole length in right ascension, determined by the time required for them to pass the slit when the clock-work was stopped, was 16·5 secs. of time—a little more than 4′ of arc, or 111,000 miles. They extended from the spot which was nearing the western limb, nearly to the centre of the sun. At five o'clock they were still visible, but much fainter. When brightest I was able to see their form, even through *h*; the lines other than hydrogen which they showed (notably D_3), were limited to the immediate neighbourhood of the spot group.—Yours truly, C. A. Young.

Prof. Henry Morton.

Photographic Record of Solar Changes.

Since the beginning of the present year, Prof. Winlock, of Harvard, has been making, by a new method, which is equally remarkable for its simplicity and effectiveness, a series of sun pictures, in which spots and faculæ are depicted with a precision which has been rarely if ever equalled.

The primary objects in this work have been to prepare and perfect apparatus and processes which might be used with the best results during the coming transit of Venus, in 1874, but indirectly a series of records has been obtained which will be of incalculable service in the study of the physical condition of the sun. The plan pursued is as follows:—A tin tube, some 40 feet in length, is supported in a horizontal position about north and south, and carries at its north end a lens of 6 inches aperture and 40 feet focal length. The other end of the tube enters a small house which serves as a photographic dark-room, and is there provided with the usual adjustable plate-holder employed in an ordinary camera. At a short distance in front of the lens, or north end of the tube, is set a plate of unsilvered glass, slightly wedge shape, to avoid the reflection from the second surface, so mounted as to follow the sun, and throw the reflection constantly on the lens.

The image of the sun on the sensitive plate is about four inches in diameter, and so greatly are all errors of the lens reduced by the long focus and small aperture of 2½ inches, that with a common uncorrected glass the most admirable pictures have been obtained. The exposure is regulated by dropping a diaphragm-slide outside of the lens.

I will try, as occasion offers, to supply you with the latest photographic news.—Truly yours, H. Morton.

THE PHOTOGRAPHIC EXHIBITION.

Just before going to press we have received the following note from the secretary of the Photographic Society. It will be seen that in regard to the assumption of evening dress—in relation to which some doubt had been entertained—it has been decided as unnecessary and undesirable. It has been resolved to try the experiment of making a charge for admission on Saturdays. On the policy of this decision we make no comment at present. This arrangement will not affect the admission of members or the friends to whom they may give tickets; these will be admitted on all occasions without charge.

Sir,—With reference to the Photographic Society's circular, which you did us the honour to publish on Friday last, may I be permitted to add the terms of a resolution passed at a meeting of the council on the 25th instant, relative to the conditions under which the general public will be admitted.

Resolved—That the public be admitted gratuitously during five days in the week; but that on Saturdays an admission fee of one shilling each person be charged, for which a catalogue will be supplied.

The exhibition gallery will, as already notified, be freely open to members of the Society and friends introduced by them on presentation of the member's ticket, at all times between the 9th and 30th November inclusive.

I am to add that, in consequence of the limited nature of the accommodation, the formality of evening dress is undesirable at the *conversazione* of the 8th November.—I am, sir, your obedient servant, John Spiller, Hon. Sec.

9, *Conduit Street, W., October 26th*, 1870.

Foreign Miscellanea.

An art critic, in reviewing the pictures at the Paris Photographic Exhibition in the *Bulletin Belge*, takes exception to the works of Mr. Hubbard and Messrs. Robinson and Cherrill, affirming that it is turning photography absolutely from its proper sphere to pretend to employ it as a rival to the painter's brush. Perhaps it would be well, in order that photographers may not again offend in a similar way, for the critic in question to point out exactly those paths to which sun-painters must in future strictly confine themselves.

Licht recommends the addition of a little strong alcohol to paste, which, being thus rendered capable of preservation for a longer period, seems to improve in its adhesive qualities, in keeping, and to become less liable to cause prints to buckle up when being mounted. The alcohol may be mixed with the cold water used to prepare the starch in the first instance.

A method of roughening the surface of negatives for retouching purposes has been recently proposed in America, which consists in adding to the varnish, prior to its application, a small quantity of finely powdered glass. Before coating the plate, the varnish is thoroughly agitated, to get the glass powder well in suspension, and it is according to the length of time allowed to elapse between the shaking up of the varnish and its application to the plate that a greater or less amount of powder is conveyed to the surface of the glass. The negative may, if necessary, be varnished and roughened on both sides, so as to be rendered capable of being worked upon by the pencil on either surface indiscriminately.

The Niepce de St. Victor Fund goes on but slowly. In Vienna rather more than a hundred florins have been collected.

As might have been anticipated, many of the principal photographers were compelled to leave Paris prior to the siege. MM. Adam-Salomon, Goupil, and Reutlinger have arrived in London, the latter, however, making but a very short stay in this country. M. Nadar, whose fame as a photographer and aereonaut is wide-spread, has been chosen Captain of the Paris Balloon Service, in which capacity he has already much distinguished himself by the ready and effective manner in which the balloon posts have been organised. M. Romain Talbot, also, a gentleman of German nationality, has been likewise forced to leave Paris, and gives a painful sketch of the ruthless manner in which his sick wife and family were compelled to depart with scarcely any clothing and necessaries, and with but little previous warning. The story is all the more painful from the fact that the case is not an isolated one, but that there must be many more of a similar nature.

M. Max Petsch, of the firm of Lœscher and Petsch, o Berlin, from whose pen we recently published an article on portrait photography, forms one of the invading army, and is at present encamped before Metz, and, fortunately, still in the enjoyment of good health. Two other members of the Berlin Society, MM. Scamoni and Boll, are also serving in the Prussian army.

M. Schwier, assistant to Dr. Vogel, whose departure for the war we recently chronicled, was, in company with MM. Quidde and Hintze, engaged as army photographer before the walls of Strasburg prior to its surrender. An extract from M. Schwier's diary may be of interest; he writes:—"Of the few hurried lines I send, you must not be too critical, since my writing desk consists simply of a sheet of cardboard upon my knees. On Monday early we left Berlin. Continual stoppages at the different stations, a hard frost, and uncomfortable quarters rendered the journey very unpleasant. On Wednesday we reached Vendenheim, the nearest station to Strasburg, and thence we proceeded on foot to Mudolsheim. The same evening, in company with Captain Burchardi and Lieutenant Dorgens, I made a reconnaissance in the distance, and observed, for the first time, the burning town of Strasburg, and the bomb shells flying around the city. This was, however, a harmless undertaking. On Thursday another reconnaissance was made with the same officers, and with

MM. Quidde and Hintze, beyond the second parallel, and this time with some risk of life. Behind us were our own batteries, and in front of us the guns of the enemy. With the exception of a ball from a wall piece, and a blind shell, there was, however, little to excite us. It was worse, however, on Friday. We were busy out of doors from ten o'clock in the morning till six in the evening, and were successful in obtaining three plates. At the end of our work the enemy had evidently become aware of our presence, for he sent a bullet into our hut, and we retired somewhat precipitately. Twenty paces distant a shell exploded, and annihilated a sentry so completely that but one leg only of the man was to be seen; our party remained, however, quite untouched. On Saturday everything went well; we worked at two different spots with the best success. To-day (Sunday) we have been busy photographing the remains of a ruined house which had been fired upon from Strasburg. Just as we were ready, the enemy saluted us with three shots from a wall piece, which buried themselves in the window frames and roof.

Dr. Karl August von Steinheil, the father of the inventor of the aplanatic photographic lens, has died at Vienna. He was well known as a distinguished physicist.

At the Russian Industrial Exhibition recently held in St. Petersburg, native photography appears to have been extensively represented. According to M. Scamoni's account in the *Mittheilungen*, the show of pictures was extremely good, and in some cases of very high excellence. The names of Bergamasco, of St. Petersburg, and Mieczkowsky, of Warsaw, are well known throughout Europe as photographers of high standing; and there are many others, we doubt not, less known to fame, whose works are also of considerable ability. Specimens of Lichtdruck were exhibited, but did not approach in merit the productions of Albert, whose examples would seem to be sold at a very high price; viz., at three roubles fifty kopeks, while very fine specimens of Woodburytype were to be had for fifty kopeks.

The new *carte format* is being made known in the German journals, and is received with a promising welcome. A good name for this new mount is still wanted.

Microscopic enlargements are being printed by the Lichtdruck process by M. Thelen, a clergyman of Dusseldorft.

At the last meeting of the Berlin Society for the Advancement of Photography, Dr. Vogel was heartily welcomed after his voyage to America. Some discussion arose on the subject of mechanical printing, and Dr. Vogel gave an account of his visit to the Woodbury Printing Establishment in London.

PHOTOGRAPHY FOR RECORDING ARTILLERY EXPERIMENTS.

The *Broad Arrow* says:—

"Visitors to the Government Photographic Establishment at Woolwich are afforded the opportunity of examining a series of photographic plates illustrative of artillery exercises, and representing, by means of about a hundred sketches, the manner in which drill connected with siege guns, field pieces, mortars, &c., is conducted. The importance of the camera in this respect might, we think, be recognised at Shoeburyness as well as Woolwich Arsenal, and the Government dockyards. We are not aware that the results of the experiments at Shoeburyness have hitherto been registered by means of the camera. If they have, it is without the knowledge of the *Broad Arrow*. We have not as yet seen any photographic pictures, for instance, of the 'great guns' and the 'little guns' which produced such astounding effects at the late contest at Shoeburyness between the Armstrong breech-loaders and the bronze muzzle loaders, and the Gatling and Montigny mitrailleurs. But, assuredly, if the camera had overlooked the batteries at Shoeburyness on the last great field day, and photographed the guns, the manning of the same, their training or working gear, and the effect of the firing at the targets a thousand yards or more out on the sands of Shoebury, what an amount of visual labour might have been saved the professional military and other visitors, including the Right Hon. the Secretary of War, Mr. E. Cardwell, who, like everybody else on the field day, had to make the best use of his eyes to mark the results of the firing at the targets. There would be no need of constant and troublesome reference to and consultation of the master of the batteries at Shoeburyness (Captain Ellis) by officers, military reporters, American generals, and other strangers, anxious to know what shots hit the mark, if the Woolwich photographic establishment had for the nonce changed the venue to Shoeburyness. Those acquainted with the mode of observation at the batteries are aware of the continual presence throughout the day of a number of prowling serious-faced gentry in civilian dress, who carry manuscript books and long hard pencils, by means of which they register on the instant of a cannon-shot or a Palliser being fired, its effect upon the distant target. These gentleman are either engineer officers in undress, or reporters to the military and morning papers. But if, at the close of a day's experiments, all these anxious professional inquirers could be permitted to inspect pictures taken on the spot by the camera of the guns and the results of the firing on the targets, how much of the laborious exercise of the visual organs might, we repeat, be saved, to the very great comfort and convenience of the observer. We hope, therefore, that on future experimental days at Shoeburyness, or at reviews of troops, naval experiments, &c., professional and scientific watchers for public purposes of the events of the day may be assisted by permission to consult the Government photographic pictures. Or might not duly recognised reporters be allowed to charter their own camera establishment and use the same?

NEGATIVES FROM NEGATIVES.

BY WM. BLAIR.

You ask my experience in regard to the making of reversed negatives from existing negatives taken in the ordinary way. I am sorry to say that my experience in this department has not been very great, as I have been in the habit, for a long time, of taking my negatives reversed at once in the camera when intended for carbon printing. However, I have done a little in that way, and was not aware that there were any insuperable—or even very serious—difficulties in the way of producing good reversals from ordinary negatives, especially if suitable apparatus and materials were employed in the work. I have sometimes improved upon a bad printing negative, and, of course, I have sometimes failed in coming up to the original. But we all sometimes fail in every department, and particularly when working sometimes without taking all the precautions necessary to success. An amateur may, perhaps, be more readily excused for this than a professional, as the former may frequently desire to try a few experiments in one direction, and then in another, without caring to follow either or any of these out in a way to be remunerative. He contents himself, consequently, with the simplest arrangements he can make with the materials and apparatus he has at hand at the time. One in this position, consequently, cannot speak with great authority on a branch which he has not made a special study.

Nevertheless, I may mention the course that I have generally adopted in taking one negative from another. Of course, first, a positive is taken from the original negative, and then a negative—one or a dozen negatives if desired—from that positive. But the manipulation differs according to circumstances. If the original negative is a dense one, I take the positive by direct printing with a dry plate in the pressure-frame. I do not care for toning. All that is necessary is, to have due gradation in the shades by transmitted light, and no great density in any part. There is a power of regulation here, both in the exposure and method of development. All that is necessary is, to do it with some care and skill, to obtain the degree of contrast and density wanted. One very important precaution in printing by direct contact in the pressure-frame is, to have the plates well padded or screened round the edges, so as not to admit light laterally through the glass to be impressed. A good positive can be got in this way by any of the dry collodion processes; or by printing without development by the collodio-chloride process; or by salted albumen spread on glass, and sensitized in the paper bath. As the negative next to be taken from this positive is to be reversed, the camera is used for that purpose; and, of course, either a wet or dry process may be adopted, and the negative may either be made of the same size, or smaller, or larger, according to the adjustment. But the collodion side of the positive should be turned away from the lens, and the focussing adjusted with it in that position. It will be seen that it is very necessary, in this case, that the positive should have been taken upon good glass, free from striæ or air-bubbles, in order that the light may suffer no derangement after passing the collodion film. There appears to me no reason to doubt that if all this is done carefully, and with a good copying camera, a negative may be got as good as the original; and, for some methods of printing, perhaps, it may be improved upon, a result which, I believe, is not by any means uncommon.

If, again, the original negative is what is called a feeble one, but full of detail, and suitable for printing from at once in the camera, then I adopt that method in taking the positive; and I take the positive reversed by presenting the back of the negative to the lens, and focussing in that position. In this case, the positive may be taken the same size as the reversed negative is intended to be; and, in that case, the final negative—one or more—may be got from it by direct printing; but if it is intended to use the wet process, and take the final negative also in the camera, then I think it will generally be found best to take the positive very much enlarged. Any defects can thus be more easily removed, or even improvements added; and, at all events, the focussing will be found more easily adjusted if the positive be of large size. Indeed, where the solar camera can be used, a good plan is, to take a very large positive on paper, which, again, can be easily reduced to a small negative of great sharpness. In copying from a large paper print of this sort, I would recommend that it should, for the occasion, be pasted down on a sheet of plate glass or some other equally even suaface, so as to present no puckering, or even the slightest undulation, over its surface when being copied again in the camera.

As I have said already, my experience in this department has not been very great, and, indeed, I was not aware that there was more than the usual difficulties of getting perfect work in multiplying good negatives. One frequently blunders and makes bad work in taking negatives direct. Some of the chemicals are at fault, or some carelessness has crept into the work, necessitating a renewed attempt, and that the work should be done over again. This will occur in taking negatives from negatives, as well as in taking negatives from nature, and probably more likely, as there are more operations in the latter case, entailing, of course, rather more risk; but I am not aware that there is any real difficulty in the matter. I see that Mr. Pickering says there is not, and I also observe that Professor Towler has lately been going over the same ground with his usual ability, and he is of the same opinion. He says: "Every operation is under your control. Some may object that it is impossible to obtain copies equal to the original. The objection has no weight," &c., &c. "Of course [he adds], extreme care is absolutely required in all the operations."

WASHED SENSITIVE PAPER.

Referring to the recent experiments in preparing sensitive paper so as to keep, Mr. H. T. Anthony says, in the *Bulletin*:

"Noth withstanding the fact that it has been found very easy to prepare paper which is capable of being kept in perfectly good condition for a long time after being sensitized, such paper does not seem to have been much used. The reason for this may be found in the fact that it is necessary to print them in an atmosphere of ammonia. Now this is not very easily managed—at least, on a large scale—without very great inconvenience to the person who puts the paper in the pressure-frames. Probably the best way to do it is to keep the paper cut to the sizes desired in a drawer, above which should be a compartment containing the vessel holding the ammonia. The drawer may be pulled open, a piece of paper taken out and placed upon the negative, and instantly covered with a piece of parchment, and the cover applied. As the vapour of ammonia would have very little tendency to rise from the drawer, the paper would be at the bottom constantly in an atmosphere of ammonia, which the parchment will retain during the operation of printing.

"The mode of operating described by Mr. Hauck [Photo. News, December 24th, 1869] does not appear to us the most desirable, as far as the mode of washing is concerned. It appears to us of very great importance, for the good keeping of the paper, that the nitrate of silver should not be allowed to come in contact with the sizing of the paper. To prevent this, all that is necessary is to float the paper upon a succession of dishes, albumen side down. Most of the silver will be found left in the first dish, and the action of the water in the others—especially if the water be a little hard—soon eliminates all but a trace of free nitrate."

THE SIMPSONTYPE OR COLLODIO-CHLORIDE PROCESS.

Professor Krippendorff has made some further progress in the preparation of Simpsontype paper, and publishes an exhaustive communication on the subject in *Helios*. The mode of proceeding he recommends is similar to that adopted by M. Ost and M. Obernetter in the manufacture of their commercial papers. Professor Krippendorff advises, in the first instance, the preparation of three solutions:—

I. Two grammes of nitrate of silver dissolved in two grammes of distilled water.

II. Half a gramme of chloride of calcium dissolved in eight grammes of alcohol (ten cubic centimetres).

III. Half a gramme of citric acid dissolved in eight grammes of alcohol.

Of solution No. 1, thirty-six drops are taken and added to thirty-four grammes of hot alcohol, together with one and a-half or two grammes of gun-cotton. After shaking the mixture for some considerable time, there are added thirty six cubic centimetres of hot ether, agitation being again renewed until the final dissolution of the cotton. Before the collodion cools, four and a-half cubic centimetres of solution No. 2 are added during constant stirring, the mixture being kept in the dark room, and finally a like quantity of solution No. 3.

Further agitation for a quarter of an hour or so is yet necessary, and the collodion may then be allowed to stand in a locality well shaded from the light; in this way it can be preserved for some time, provided it is well shaken once every fortnight or ten days.

A quarter sheet of thin polished card is now bent at the margins to form a tray, and supported for convenience upon a broad lath of wood; the collodion is poured carefully upon the surface of the card in such a manner that three square centimetres are about covered by one cubic centimetre of collodion, and the superfluous liquid again poured off, but not into the stock bottle. Applied in this proportion the price per sheet of the paper amounts to from eighteen to twenty groschens (about two shillings, or rather less), the material being cheaper, therefore, as likewise better, than it can be obtained in the market. Instead of thin cardboard, chalk paper, such as that used by lithographers, may be employed, although the latter is somewhat more difficult to manipulate. Ordinary sized or gelatined writing paper may also be successfully employed; it is stretched out to dry by means of pins or clips, and in an hour's time the margins are cut off, and the sheets formed into the desired shapes by means of a pair of scissors, the outlines having previously been marked at the back in pencil.

The printing is conducted in the same way as with albuminized paper, the deep blacks being allowed to bronze before the prints are withdrawn from the pressure-frames. The tone of the pictures varies from violet to indigo blue, the former being due to papyroxyle, and the latter to ordinary pyroxiline. After printing, the pictures are cut down with a pair of scissors to the necessary size, and then placed in a washing bath; the water employed in this bath—which is simply common spring water—should be renewed every two or three minutes, as the prints will otherwise assume a yellowish tint, and become spoilt. The operation of washing is continued until the water is poured off bright and clear, a period of half an hour being generally requisite for the purpose.

For toning and fixing, another set of three solutions must be prepared thus:—

I. Forty grammes of hyposulphite of soda dissolved in a dish containing one hundred and fifteen grammes of distilled water.

II. Two and a-half grammes of acetate of soda dissolved in fifty-five grammes of distilled water.

III. One gramme of chloride of gold dissolved in fifty grammes of distilled water.

Of solution No. 3, two and a-quarter cubic centimetres are put into a dish with solution No. 1, and afterwards solution No. 3; and in this mixture the pictures are laid in succession. They become, in the first instance, yellow, then brown, purple, red, and finally black. After half an hour the operation is finished, and the prints rinsed one by one, they being subsequently placed in a porcelain dish of spring water. In this bath the film of collodion becomes gradually separated from the chalk paper upon which it has rested, but, with the gelatined or sized paper, immersion in warm water is necessary to effect such a result. The paper support is withdrawn from the bath, and the water of the same renewed. If chalk paper has been employed, it is necessary, before one goes any further, to lay the film face downwards upon a sheet of glass, and to clean it from the adherent chalk powder by means of a soft brush or tuft of cotton-wool. If the dissolving off of the film does not take place—as will sometimes occur when old paper is used—the image is submitted to a further amount of washing, and allowed to remain upon its original support.

The best and simplest method of applying the film to a second support is perhaps the following one:—The film is lifted from the water by means of a glass plate, and coated with a solution of gelatine (one part of gelatine in fifty parts of water); a sheet of fresh chalk or lithographic paper of the requisite size is then pressed upon the image, and a corner of the latter carefully lifted in contact with the paper, by which method the two surfaces may be perfectly brought together into contact. The picture is now dried between two pads of filter-paper, without, however, proceeding to press it in any other way; and to prevent any risk of tearing the film—an accident which easily happens—the surface may be coated with an application of positive varnish.

By employing the chalk paper as the means of support for the film, pictures of a much finer character are obtained than when ordinary paper only is used. The film may also, if desired, be applied to glass, and in this way pretty diapositives are secured, which can again be used for the production of negatives.

In regard to the value of Simpsontype pictures, Professor Krippendorff sums up as follows:—Permanence, beauty, simplicity of preparation, are all on the side of these productions when compared with prints upon albuminized paper, and did but a certain method of producing collodio-chloride pictures exist, they would undoubtedly prove dangerous rivals to albumen photographs. In the first place, the costly sensitizing bath is dispensed with, and, in like manner, the time-taking operation of silvering the albuminized surface; instead, the paper is simply coated with collodion, the operator enjoying the palpable advantage of being able to prepare at one time sufficient sensitive material to last him for a week. Not more important is the saving effected by rendering unnecessary the tedious process ot washing, and a continual flow of fresh water, which is invariably required in the manipulation of albuminized prints. The rapidity of production is another point to be duly considered, for it would be possible, in working the Simpsontype, for customers from the provinces who come up to town for a few hours only, to receive the same afternoon copies of photographs taken in the morning. These advantages, together with the circumstances that transparencies are by the process easy of preparation, and that negatives may, in the same way, be multiplied, should certainly secure for the collodio-chloride method an increase of attention on the part of photographers.

The *Mittheilungen*, in referring to these remarks of Professor Krippendorff, promises, at an early date, to make known some further results recently obtained by this method of printing.

PHOTOGRAPHS AT THE DERBY FINE ART EXHIBITION.

The following notice of the photographs at this exhibition, which appears in the *Derby and Chesterfield Reporter*, will probably interest our readers.

Some of the most interesting specimens of modern photography are to be found in the photograph room of the Exhibition. Was it a knowledge of this fact which prevented our own local photographers from exhibiting, or to what cause are we to attribute their absence? Surely in a country like this, so rich in landscape, so famous for picturesque country seats and old architecture, civil and ecclesiastical, some of our photographers must have been busy! In portraiture Mr. Keene alone exhibits on the door of the room a recently hung collection of four portraits in oil (186), rather heavily coloured, and contrasting unfavourably with (174) a delicately painted water colour on porcelain of a little girl, also by Mr. Keene. In this picture the photographic element is, as it should be in all attempts at colouring photographs, reduced to a minimum, and the skill of the artist, together with the extremely fine surface of the plate—rivalling ivory in texture—assert themselves in a most pleasing picture. Of portraits pure and simple in the art, the three portraits of Mr. Slingsby, of Lincoln (173), take the highest rank, and, indeed, are quite unsurpassed by anything else in the room for perfection of definition and judicious arrangement of light and shade. The velvet dress of the lady is a marvel of reproduction, while in the dress of the lady holding a fan, that most excruciating *crux* to a photographer, a white dress, is rendered in a tone at once soft and subdued, never in the least interfering with the high lights of the picture, and yet expressed clearly to the minutest fold. To find fault with such photography as this might seem hypercritical, and yet we cannot help saying that these three portraits seem to be rather too redolent of the studio. The arrangement of the photographic "properties" is rather too much after studio precedent. Why, for instance, in the portrait of the lady in the velvet dress, was that little bronze "property" stuck on the table, and on a book, too, in order to maintain the balance of the composition? Was there nothing in the house more suggestive of the natural and the obvious that would have answered the same purpose? It is true that these three people may be said simply to have "sat for their portraits," and that this is all that was intended to be expressed. But why emphasize this fact by the introduction of hackneyed details, and by a mannerism which smells so strongly of the glass shed and the case of specimens at six shillings a dozen?

Next to Mr. Slingsby in manipulation, but far surpassing him in artistic treatment, comes Lieut.-Col. Stuart Wortley, whose four large female portraits (168), though hung at a neck-breaking height, repay even that torture to look at them. In the "study after Holbein," and "Rhoda," we have a lovely face, charming pose, well arranged and selected drapery, all making up a picture that suggests only completeness of idea perfectly rendered.

Occupying a very large space on the walls are a number of the productions of Mrs. Cameron. These photographs are now so well known—and, indeed, those before us have evidently done so much duty, if one may judge from their present condition—that we should be rather inclined to pass them by "sub silentio." One cannot help asking, nevertheless, how it is that they have had such a reputation? Granted that some of them possess a very daring and effective chiaroscuro, that some are portraits of celebrities, and others embody, not unsuccessfully, a classic idea; what in the name of all the nitrate of silver that ever turned white into black have these pictures in common with good photography? Smudged, torn, dirty, undefined, and in some cases almost unreadable, there is hardly one of them that ought not to have been washed off the plate as soon as its image had appeared. Look at Slingsby's and Colonel Wortley's, and then say whether these pictures might not at least have been decently done if they were done at all. Even in such a small matter as mounting, Mrs. Cameron is wrong. Colonel Wortley and Slingsby take care that none of the whites of their pictures shall suffer by the juxtaposition of white cardboard, and they therefore use a gold mount. All Mrs. Cameron's are *white*, or were once, and they make the pictures look dingier than ever. We cannot but think that this lady's highly imaginative and artistic efforts might be supplemented by the judicious employment of a small boy with a wash-leather, and a lens screwed a trifle less out of accurate definition.

The most remarkable of the photographs are those known as Combination Pictures; *i. e.*, pictures printed from two or more negatives, the junction or combination being so cleverly concealed—or, rather, as we ought to say (to please the photographer) the subject being so well treated—that it has all the appearance of a simultaneous operation. Of these the *chef d' œuvre* is, without controversy, Mr. Slingsby's "Early Summer" (180), a charming picture with fine atmospheric effect, beautiful landscape, and a most judicious grouping of figures. The same artist also exhibits a pair of studies, "Labour," and "Rest" (171), two rustic scenes; also, "The Milkmaid" (170a), a large study equally well managed, and that, too, on a scale which must have severely taxed his ingenuity. In the "Stolen Moments," and "Preparing for Dinner" (172) of Mr. Hubbard, we have specimens of combination printing applied to interiors; the rustic cottage room, the accessories grouped round the leading figures, all are admirably rendered. In 175 by the same artist we have the "Toilet," a girl arranging her hair at a glass, and "Pensive Thoughts," a girl seated at a window, through which the busy street is seen (an actual photograph—not a dummy) contrasting cleverly with the distraught lass, who sits with easy abandon, her eyes fixed far away upon—her thoughts. Looking at these pictures, which are, of course, portraits, and then at Mr. Slingsby's three portraits before mentioned, our meaning will be at once grasped when we say that the latter are somewhat deficient in artistic merit.

The six photographs (165) of Sir Joseph Whitworth's manufactory are good specimens of the art, though not so interesting as (166) five views of his house and grounds, all of which are well done and on a large scale. A very large photograph (167), taken in three divisions, of the City of Moscow, shows a remarkably clear definition even to the extreme horizon. Last on our list we find Col. Wortley's "Pictures of Clouds" (179), modestly so-called, but which are in reality highly poetical conceptions, although achieved through the prosaic medium of a lens. They show how much can be done with small materials, and even in an art so apparently unplastic as photography, in the hands of a man of true artistic feeling. Here we have above a thunderous mass of rolling cloud, below dark blocks of tower and fortress grim, and far away beyond a sparkling line of sunlit sea. There is scarcely anything else, and yet it is a picture.

Correspondence.

ALLEGED PHOTOGRAPHIC PIRACIES OF COPYRIGHT.

Sir,—With reference to the report in a recent issue of the prosecution for infringement of copyright, I will, with your permission, say a few words.

As regards the facts, I have only to observe that the evidence given by the defendant's shopman and myself was perfectly true, and that there was not the slightest justification for the remarks made by the magistrate thereon, which remarks I shall challenge elsewhere. It were well if magistrates would remember that they have not only to perform the functions of a judge, but also the functions of a jury, and that every person accused of committing an offence against the law has, by the law, a right to have his case thoroughly enquired into, every fact proved, and every legal point duly considered. When magistrates deprive a defendant of this right they bring the administration of justice into contempt. The present case is one more added to the list of instances of magisterial incapacity.

I will now speak of the legal points connected with this matter, and which the court refused to listen to. I will first premise that copyright being a privilege in the nature of a monopoly and against the "public user," the statutes conferring it are strictly construed; that is to say, unless every condition prescribed by the Act shall have been complied with, copyright cannot be maintained.

"The Reaper," T. Faed, R.A.—The complainant B. Brooks claims the copyright of this picture as the assignee of E. Gambart, and all the evidence in support of his title, produced by him at the hearing, was an invoice and receipt for the price of the copyright, signed by E. Gambart, and a certificate of registration of that invoice at Stationers' Hall. The principal conditions required by the Act are, that the work shall be *original*; that the author be a British subject, or foreigner resident in the British dominions; that the work be sold or disposed of for the first time subsequently to the commencement of the Act; that at or before the time of sale a written agreement be signed, either reserving the copyright to the vendor, or transferring it to the vendee; that the author be registered at Stationers' Hall as proprietor of the copyright; that every assignment of the copyright be registered; that a short description of the nature and subject of the work be entered upon the register. In this case there was no registration by Mr. Faed; there was no registration by Mr. Gambart; there was no evidence of any written agreement having been made between Mr. Faed and Mr. Gambart at or before the time of sale; there was no evidence to show that the picture was first sold subsequently to the commencement of the Act; there was no proof that the picture was an *original* picture; no short description of the nature and subject of the work is entered upon the register. Had the magistrate consented to adjourn the hearing, evidence to settle these points would have been produced. There was no evidence to prove the nature of the picture purchased of the defendant by the plaintiff's agent, or its origin. The plaintiff deposed that it was a photographic piracy of his copyright in the painting. That was his honest belief, no doubt; but in courts of justice judges require something more than the mere belief of a witness, they require proof of the fact.

"Erin, Farewell," T. Faed, R.A.; "Grace Darling," T. Brooks; "Obedient to the Law," and "Patient in Tribulation," F. Goodall, R.A.—In these four instances the defendant sold to the complainant's agent photographs issued by the complainant himself. "Erin, Farewell."—In this case the same legal points occur with reference to the copyright as in the "Reaper." "Grace Darling."—The copyright of this picture appears to be good, but, in matters relating to copyright, appearances are often deceitful, and it is better to examine the parties interested therein. "Obedient to the Law," "Patient in Tribulation."—In these two cases the plaintiff claims the right, by a contract with E. Gambart, who, for a consideration, granted to the plaintiff the privilege of making photographic copies of the pictures. This contract not being an assignment of copyright, the plaintiff does not acquire by it any right to sue for infringement of copyright. In order, therefore, to obtain a status under the Act, the plaintiff employed Mr. Spencer to make photographs from the engravings; and, by an agreement, Mr. Spencer transferred his copyright in the photographs to the plaintiff, which transfer was registered at Stationers' Hall. At the hearing a certificate of this transfer was produced as evidence of the complainant's copyright. Admitting, for the sake of argument, that the defendant had sold copies of these engravings, then it is contended, on the part of the plaintiff, that although the defendant did not actually sell copies of the plaintiff's photographs, yet, in selling copies of the engravings, he infringed the *copyright of the design* of the plaintiff's photographs. A moment's reflection will show the unsoundness of this proposition. The plaintiff has no copyright but what was assigned to him by Mr. Spencer. But what copyright had Mr. Spencer to assign? He merely made photographic copies from the engravings; and although Mr. Justice Blackburn has given an opinion that a photographic copy of a painting is entitled to copyright, he carefully qualified his opinion by observing that the registration would only protect the photograph; it would not prevent the subject matter from being copied. Had Mr. Justice Blackburn considered the matter a little more, he would have seen that his opinion involved a contradiction. If a photographic copy of a painting be entitled to copyright, it follows that a painting made from a painting is entitled to copyright. But the Act is only applicable to *original* works of art, and a work of art cannot be both an original and a copy. I maintain that a work of art which is a copy of another work of art is not entitled to copyright under this Act. Photographic reproductions are copyright under 15 Vict., cap. 12, sect. 14. It is clear that Mr. Spencer, by making copies, acquired no copyright in the designs of his copies. The Act gives copyright in the design to the author thereof. In these instances Mr. Goodall is the author, and he has assigned his right to Mr. Gambart, with whom it still remains. The magistrate, in his judgment, said, "no explanation had been given of the remark by the defendant, that he had the engravings, and was going to print photographs from them." Had the case gone on, it could have been proved that the defendant neither had the engravings nor the means to make photographs from them. His remark was merely a shopkeeper's expression; it proved nothing; it merely expressed an intention, and was not evidence of any overt act. And further, no explanation was necessary, because the offence of pirating an engraving is not within the magistrate's jurisdiction, which only extends to paintings, drawings, and photographs, and to nothing else. If the defendant had sold copies of the engravings, the offence would have been against Mr. Gambart, the publisher, and not against the complainant, who has no interest in the engravings. The plaintiff, on being asked how many negatives he had of these subjects, replied, Three. Now it is necessary, in order to maintain copyright, that every negative taken direct from a subject be registered, because each negative is an independent work. In these instances only one negative of each subject has been registered. In the case "Maul *versus* Gass," heard before Mr. Commissioner Kerr, for the infringement of the copyright of the plaintiff in a portrait of the Duke of Cambridge, it transpired at the hearing that there were (I think) sixty negatives taken, but only one was registered. The learned Commissioner nonsuited the plaintiff upon the ground that every negative required to be registered. In the present case, admitting that the defendent did sell a copy of complainant's photograph, which of the three negatives did he pirate—the registered negative, or one of the other two?

The complainant's advocate, in addressing the court, used the following curious argument. Speaking of original photographs, he said:—"Some persons suppose that a photograph of a landscape or a photograph of a person is what is meant by an original photograph; but it is not so. An original photograph means the *first* photograph taken of any subject, as, for instance, the *first* photograph taken from an engraving." I need not say anything to refute this.

I have now placed before your readers a statement of the legal points connected with this case. It is an old saying that "things done in a hurry are never done well," and it applies with peculiar force to judicial investigations done in a hurry. "Festina lente" is a golden rule, and it would be better for the interests of justice if magistrates were more frequently guided by it.—I remain, sir, your obedient servant,

London, October 19th, 1870. J. CUNNINGTON.

INFORMERS AND PIRATES.

SIR,—Being in London from Dublin on business, I happened to drop in at the Worship Police Court just as the case for infringement of copyright referred to in your leader of last week was being heard.

The prosecutor deposed that the photographs produced were piracies of his copyrights. The defence was, that they were photographs issued by the prosecutor himself, and pieces cut from the lower edge of each photograph, having the prosecutor's stamp, were produced, and found to tally with the photographs. The prosecutor, on being pressed, refused then to swear positively that the photographs were piracies. He said he could not swear they were piracies, but thought they were.

At this point the case should have stopped, there being no *positive evidence* forthcoming that the photographs were piracies. The magistrate, however, was not satisfied. The solicitor for the defendant then said: "If it will shorten the case or save time I will call a witness who saw the stamps cut off, on the understanding, if necessary, I shall be allowed to proceed with my defence." He then called two witnesses. One proved that he saw the stamps cut off from the photographs, and the photographs in court were those photographs. The other witness proved that he cut off the stamps. Even this direct and positive evidence did not satisfy the magistrate; and, upon the defendant's solicitor rising to address the court and continue his defence, he desired him to sit down and hold his tongue, or he would make him. Of course, if this had happened in a Dublin Police Court, there would have been a row, and what the newspapers call "a scene in court;" but these things are managed better in England. The defendant's solicitor dutifully obeyed the order. The magistrate then, after making some insulting remarks upon the defendant and his witnesses, fined the defendant £25 or ten months' imprisonment, being the heaviest penalty he could inflict.

There was no evidence produced to show any guilty knowledge, or that the defendant had sold any other photographs than those produced. The two letters written by the prosecutor's agent the magistrate said were perfectly justifiable. Irish judges differ from him.

I remember a case which occurred about two or three years ago, when an "eminent publisher (?)" came to Dublin to shear some Irish shopkeepers, but who went back shorn, a sadder and, I believe, a wiser man. He had two agents, men of "gentlemanly appearance," who swore they had bought some piratical photographs of a Dublin dealer, against whom twelve separate actions were brought in the Queen's Bench. The jury, however, declined to believe them; and, in the first action, returned a verdict for the defendant. The learned judge, in his charge to the jury, said that he could not commend the stratagem employed by the plaintiff to obtain evidence; it was such as no just mind could approve. The record in the second action was withdrawn. The remaining ten actions appear to have evaporated. For the first action the plaintiff had to pay the defendant £100 for costs; and in the second, £80, so that the Irish spec. proved a failure.

In another instance, one of the men of "gentlemanly appearance" was waited for outside the Court by a Tipperary Boy, who, as soon as he saw him, pounced upon him and dropped him into the Liffey, which was convenient. We have not been troubled since, either by "eminent publishers" or their spies.

In the case just disposed of, it appeared that the agent visited the defendant's shop several times, and the photographs he required were not in the defendant's stock. It was only on being pressed by the agent that the defendant consented to get them. It is doubtless quite right that owners of copyrights should send agents to enquire for certain copies at the shops where they think they are likely to be found; but when, on enquiry, the agent finds that the shopkeeper has not the copies asked for in his possession, I say he is not justified in pressing him to get them, because he is inciting him to commit a misdemeanour, and, for so doing, he ought himself to be punished.

I may add, that the magistrate's decision caused great surprise in Court. I think, as it was getting late, the magistrate thought to cut it short.—I am, sir, your obedient servant,

42, *Grafton Street, Dublin, October 26th, 1870.* T. B.

OPERATORS' "SPECIMENS."

SIR,—Employers, in advertising for assistants, almost invariably demand specimens to be sent of the applicant's work. I would wish to ask you, and them through you, how and wherefore they expect us to get such specimens? I have served a few employers, but I do not know one whom I would have the temerity to ask to allow me to have a print from some of his choicest negatives to be shown as specimens of work in applying for future situations. Such a request, I apprehend, would lead to my immediate expulsion from the premises, and to appropriate such without permission is a course the danger and consequences of which we have lately seen an instance in your pages. I shall be glad to be enlightened on this subject.—I am, sir, respectfully yours, AN UNEMPLOYED PRINTER.

Proceedings of Societies.

Manchester Photographic Society.

The annual meeting of this Society was held at the Memorial Hall on Thursday evening, the 13th inst., the Rev. Canon Beechy, M.A., president, in the chair.

The minutes were read and confirmed, and the secretary read the

Annual Report.

Your council, in submitting the fifteenth Annual Report, regret they have to announce a slight falling off in the condition of the Society.

The treasurer's accounts, showing the receipts and expenditure, will be laid before you.

The members on the books are eighty-four, being the same number as at this time last year, and three gentlemen are nominated for election to-night.

The attendance at the monthly meetings has not equalled that of the previous year. The average shows 32⅓ against 39⅓.

For various reasons the out-door meetings were not held during the past season, but your council hope to revive them next year under better auspices.

Your council regret that one paper only was read during the session, namely, "On streaks in the direction of the dip," by Mr. Noton.

Your council are indebted to Mr. Clifton, of London, for an able and amusing lecture on perspective, light and shade, and general pictorial effect.

The most important event of the year was the soiree and exhibition in February. The Exhibition was exceptionally fine, and surpassed all former efforts of the Society in the number, variety, and general excellence of the works displayed, and your council take this opportunity of recording their high appreciation of the liberal manner in which their appeal was responded to by the leading photographers of the day.

The Art Union, although by no means discouraging in its results, did not equal its predecessor in the value of the photographs distributed. The sale of shares realised £44 17s. The sum expended in prizes and working expenses amounted to £40 17s. 1d. One hundred prizes were distributed, and the balance in the hands of the secretary is £4 5s. 7½d.

Your council cannot close this report without urging the members to exert themselves to interest the monthly meetings, either by reading papers, or by bringing their successes and difficulties, and even their absolute failures, before the members. It should ever be remembered that the object of this Society is not only to obtain, but also to disseminate, information relative to the art of photography, and that the Society cannot flourish if members attend the meetings with the sole object of acquiring knowledge. The humblest efforts of the most diffident will always be received and responded to with pleasure and courtesy, and your council would, therefore, say, Let no one be afraid to stand forth.

The President made some remarks on the report, and complimented the members on their kindly feeling towards each other, and on the happy way in which professional and amateur members worked together. He said it was to the lasting credit of the professional members that they were always foremost to offer the benefit of their experience to the amateurs. It had always been a pleasure to him to meet the members of this Society, and he could sincerely say he should never be absent from the meetings when his many other duties would allow him to be present.

Mr. Mabley said he wished to say a few words on that part of the report wherein allusion was made to the out-door meetings. It had been stated, as a reason for the discontinuance of such meetings, that all the available country around Manchester had been worked up. He held a very different opinion. He considered there was plenty of country within a few miles distance, where good and even beautiful subjects could be found, and he believed that nothing was wanting but determination and desire on the part of the members to render the out-door meetings a source both of gratification and profit to those who attended them.

The treasurer's accounts (pending audit) were then passed.

Messrs. Coventry and G. T. Lund were appointed tellers and election of officers for the ensuing year resulted as follows:—

President—The Rev. Canon Beechy, M.A.

Vice-Presidents—Messrs. Thos. Heywood, G. T. Lund, W. T. Mabley, F. C. Tobler, M. Noton.

Council—Messrs. W. G. Coote, C. Hebert, W. D. Sanderson, I. Wade, R. Atherton, W. Hooper, A. Patterson, R. Knott, L. E. Whaite, G. Wardley.

Hon. Secretary—Chas. Adin.

Treasurer—J. H. Young.

Auditors—Jas. Lord and J. C. Sewell.

Messrs. J. Rogerson, R. Lakin, and A. Whitham were elected members of the Society.

It was then resolved to add the following to the rules:—

That any member may have the privilege of introducing one friend to any of the monthly meetings, provided always that the same gentleman or lady be not introduced more than twice in any year, and that his or her name be written opposite the member's name in the visitor's column, and the extra teas be paid for by the member.

Mr. Noton said he should like to show a little experiment to the gentlemen present, which he thought would convince them that vulcanized rubber tubing was not quite the proper article to join gas-tubes with when considerable pressure was intended to be applied. Mr. Noton then produced his well-known air-pump plate-holder, on which he had a disk of vulcanized rubber. He dipped the holder into water, and attached to it a plate of glass. It was then clearly seen that air was rapidly finding its way between the rubber and the glass to the vacuum chamber, and in a few minutes the vacuum was destroyed. Mr. Noton then removed the disk of vulcanized rubber, replaced it with one of pure rubber, and again attached the glass. The vacuum was then, to all appearance, perfectly maintained.

Mr. Coote exhibited a plate from which a negative had instantly disappeared on the application of an ordinary negative varnish to it.

Mr. Hutchison exhibited a number of photographs taken on the continent in the spring, and some good views of Tintern Abbey.

The Secretary, in reply to a question from Mr. Hebert, said he had been printing on washed paper, and was quite satisfied with the results. He had found the paper good after keeping it a week, and it was a great convenience to him, as he could only print occasionally. His first attempt was particularly unsatisfactory; the second very good. He fumed his pads rather than his paper, because the result was more uniform, and had obtained better prints from some thin negatives than he had ever found it possible to secure on unwashed paper. He had obtained as good prints and tones from a slightly acid bath as from an alkaline one.

The proceedings closed with a vote of thanks to the officers for their services during the past year, and to the president for his services in the chair. C. Adin, *Hon. Secretary.*

Talk in the Studio.

Nearly Saved by a Photograph.—The notorious Italian brigand, Antonio Cazzolino, recently taken, and killed in the proceeding, was found to have on his person, amongst relics of the saints and weapons of offence, his own photograph. By virtue of the holy relics he believed himself to be invulnerable to gun or sword. In this latter point his belief, however, proved false, and the photograph, it is stated, had well-nigh proved a better defence than the Host itself, for it had been perforated in the middle by the mortal stab.

Perils of Photographers during War.—The *Echo* has the following:—"It is impossible to describe the remains of Bazeilles. The London Stereoscopic Company's staff was busily employed taking 'views' while we were going over the ground, and from those the British public will be able to get something like an idea of the terrible desolation of the spot. As an instance of the perils incurred by men of peace whose business takes them to such scenes, it is worth mentioning that the establishment of the Stereoscopic Company in Cheapside had a very narrow escape from being thrown into mourning from something which happened during the operations which produced the pictures, in all probability to be published soon after this letter. Mr. Nottage, jun., and his assistant, Mr. Pretorius—an Austrian—had just fixed their camera, and a family group, composed of the correspondent of one of your contemporaries, an American general, your humble servant, and our 'retainers,' was standing in that fearfully expectant attitude which distinguishes a knot of people who have been told to look 'natural,' and are trying to do it, when a grumbling noise, like the cry of a very young earthquake, warned the operators to shift their apparatus from under a high wall. They had hardly done so when there was an awful crash, and from amidst dust and smoke one of the artists—Mr. Pretorius—emerged with his head bleeding profusely from the effects of a large piece of stone which had struck him.

A Photographic Walking-Stick.—A correspondent of Anthony's *Bulletin* says:—"As you request ideas, I will send you a new and very novel way of advertising. I christen it the 'Artist's Cane.' It has been lately gotten up, and attracts a great deal of attention wherever shown. Said cane can be made of black walnut, either three, four, or five-sided, of the proper length, and style of head adjusted. The sides are covered with photographs in size and shape proportioned to the surface. The cane I carry is made of black walnut, is five-sided, with a carved bird for a head, holding suspended from its bill a few minette photographs, and on its breast is a small silver plate on which my name is engraved. The body of the cane contains one hundred and fifty-eight photographs, varnished to protect them."

The Photographer and his Model.—In an article on the Passion-play at Ober-Ammergau in the *Illustrated Review*, an excellent new weekly, it is stated that one of the novices sitting for her portrait to a local photographer in character made an impression on the heart of the photographer as well as his sensitive plate. "It has been questioned," the *Review* remarks, "whether the eager notice the village actors receive at the hands of visitors, their sitting for their photographs, and the great demand there is for their cartes, is likely to be of benefit to them. One of them, it must be allowed, would certainly answer the question in the affirmative without hesitation. A very pretty girl, a novice in a convent at Augsburg, being a native of Ammergau (by the way, only Ammergauers are allowed to play, and of them only those whose character is stainless), received permission to go back to Ammergau this year, in order to take a part in the chorus. The photographer to whom she sat fell in love with her, and (unless they are married already) they are about to become man and wife, and the convent walls will see her no more."

A Photographic Testimonial.—We (*Hampshire Advertiser*) were favoured a few days ago with an inspection of a volume of photographed views, taken by Mr. Savage, at Otterbourne. The book is part of a testimonial given by the parishioners to their late rector, the Rev. Mr. Bigg Wither, as a mark of their appreciation. The album contains something like 300 views of localities, persons, and buildings, the first including the village and its environs; the second, every class, from the Squire's family at Cranbury down to the humblest cottier and his family; whilst the third embraces all erections, from the House of God to the poorest cot. Of course, all the groups are interesting, embracing, as they do all ages and all conditions, not the least so being those in which the talented authoress of *The Daisy Chain*, *The Heir of Redcliffe*, and many other popular works, sits surrounded by her family and her school children.

Iodine.—Professor Wagner, in his reports, says that the manufacture of iodine from Chili saltpetre already amounts to 30,000 lbs. per annum. The method invented by Thiercelin for its reclamation from the crude material is as follows:—The mother liquors resulting from the manufacture of saltpetre are treated with a mixture of sulphurous acid and sulphite of soda, in proper proportion, and the iodine will be precipitated as a black powder. The precipitated iodine is put into earthen jars on the bottom of which are layers of quartz sand, fine at the top and coarse at the bottom. From this it is removed by earthen spoons into boxes lined with gypsum, and a greater part of the water thus removed. It is sometimes sold in this impure state, or further purified by sublimation.

To Fix Drawings in Lead-Pencil, Charcoal, and Chalk.—W. Wolanek states that when the paper containing drawings or writings made with lead-pencil or charcoal is painted over on the reverse side (where no writing or drawing exists) with a moderately strong solution of bleached shellac in alcohol, the drawings or writings made with lead-pencil, &c., become thoroughly fixed, so that they cannot be rubbed off.

To Correspondents.

Moonlight Photographs.—The press of interesting matter demanding space recently has prevented our giving insertion to various communications on the subject of photography by moonlight, the more especially as in several instances the arguments were confined to speculative statements without proof. In justice to the writers of same, however, we subjoin extracts from their letters. M. Ogier says, speaking in reference to the "First Hour of Night":—"These gentlemen [Messrs. Robinson and Cherrill] are past masters in talent, in dexterity, in prestige, and are the great makers of the *tour de force* of the photographic art. That which has astonished me is that they have waited to produce their beautiful image until I had sent you mine, and when you have given me more extended space than I merited. It is not doubted that Messrs. Robinson and Cherrill have produced a beautiful photographic print, but the point to determine is if the print is produced by moonlight without retouching; and to terminate the debate, I offer to send you my negatives if those gentlemen will send you theirs for examination. Mr. Hurst asks if it is not better to make false moonlight effects with the sun, which are very beautiful, than to make them with the moon, which are not so good. He is right, perhaps; but my aim was to work by moonlight, to try to make moonlight effects with the moon, as one makes a jugged hare with a hare; and I have succeeded. I have given you the proof. I have not sought other things, for I believe it to be altogether honest not to call moonlight effects that which is an effect of the sun, not to give to the public the rabbit as the hare. Notwithstanding the evidence of the possibility of producing these veritable effects of the moon, the writer of the 'Echoes of the Month,' declares the thing impossible. The philosopher of Athens, in place of discussing upon the possibility of existence, proved his existence by walking round his tub. I have tried to follow his example. I offer, then, my proofs. Now 'Lux in Tenebras' speaks with good faith and justice, and he believes that one can make moonlight photographs. He has seen one by Mr. Breese. I also have done a marble bust of Garibaldi by moonlight. It is very easy, and does not need any subterfuge, any process, any combination; have an instrument of short focus, with large enough lens, and in ten minutes, by ordinary means, Mawson's collodion, iron, and pyro, you will have the image." M. Ogier then proceeds to speak of the more difficult and important task of producing photographic images of the sun without blurring and halation, like those of his we recently noticed. In reference to the first part of his letter, we ought to assure him that the "First Hour of Night" was produced some weeks—we believe months—before his photographs were noticed in the News. A Guernsey correspondent has sent us several letters, expressing doubts of the genuineness of the effects produced, stating that it was impossible, in the month of July or August, to secure the full moon and foreground objects in one picture at eleven o'clock or midnight, inasmuch as at an hour so late the moon was too high in the heaven to admit of such a result. He believes that the pictures in question were taken at a much earlier hour in the evening, soon after sunset, and that the foreground objects were illuminated with the waning light of the sun. Subsequently he put the matter to a practical test, and on the evening of the 10th inst. exposed a plate. He sends us the following remarks:—"I send you herewith an untoned print from a negative taken last night, commencing at 7·30, with exactly half an hour's exposure. The negative, as you will see, is considerably fogged, owing to the plate having been kept about an hour and a quarter between preparation and development, and the use, probably, of a very strong developer, and too little acid. I cannot detect a trace of any opaque object, or even horizon, beyond the reflection of the moon's rays on the water. The break in the moon's path was caused by a passing cloud. The night was as favourable as possible, having had a heavy thunder storm the night previous, which had rendered the atmosphere particularly clear." The print forwarded gave the moon as a cylinder, as in M. Ogier's pictures, and also gave a track of reflected light in the sea, but no trace of foreground objects. On the whole, we think it rather tends to prove than to disprove the possibility, as the results of M. Ogier were doubtless taken under more favourable conditions.

T. B.—In printing-in natural landscape backgrounds to figures it is not necessary to paint out every blade of grass, &c., in the mask. The figure, foreground, and a grey background are all printed from one negative; the figure and foreground are then masked; for the foreground a comparatively roughly cut mask will answer, the junction between it and the image of the landscape negative being effected in such manner as the subject demands, softening or vignetting with cotton-wool often answering well. There is no such difficulty as our correspondent imagines. It merely requires careful manipulation. Many we know are practising the operation with commercial success.

W. de W. A., and M. M.—We will give the subject further attention, and answer in our next.

T. E. W.—The carbon process has not yet been regularly adopted in any establishment that we know of for card portraiture; not, however, from any want of delicacy or suitability for the work. The causes are various. Primarily, because everyone's arrangements have been made for silver printing, and it is much more easy to continue getting regular good results than to change the whole course of operations and risk interruption to business. Partly because a common opinion prevails that carbon printing would be more trouble where small numbers from various sizes and qualities of negatives are required. 2. There is no method of getting rid of the floating scum except by drawing a piece of paper over the surface of the bath before commencing working. We cannot say what the white precipitate was without knowing the history of the bath, and what had been added previously. Had citric acid ever been added? The white precipitate after adding ammonia looks like citrate of silver. 2. The specimen you enclose is by no means bad work. It is a little hard, being too chalky on one side of the face, and dark on the other, a fault you may easily remedy. The price is very cheap indeed.

NIL DESPERANDUM.—You do not state the details of the case sufficiently fully to enable us to form an opinion. At what stage of the printing operations did the spots appear? Their appearance suggests to us that they were produced after fixing, whilst washing. We have seen similar results on prints remaining a long time in impure washing water; and also something like them from dry dust of chloride of lime reaching the washing water.

E. G.—We can only explain the circumstance that some dealers sell articles below the manufacturer's prices, on the principle that they are desirous of extending their business by accepting very small profits, just as many booksellers will supply books published at a shilling for tenpence. The goods are, we believe, not inferior when supplied for small profits. Nevertheless, we believe it is very questionable policy, and eventually tends to the advantage of no one. All depreciation in price, as a rule, tends, except under special circumstances, to an equal depreciation in quality. 2. The tendency in the collodion you mention to become surface dry and cause matt silver stains is due to the quality of the pyroxyline employed. Very often the tendency of that condition of pyroxyline which gives the greatest sensitiveness is to give a collodion which repels the aqueous solutions, especially when the collodion contains salts of cadmium. There is only one certain remedy—age and ripening of the collodion. You may ameliorate the evil by mixing the collodion with an older and less repellent sample. Or you may agitate it with dry carbonate of potash; this will make it less repellent, but sometimes causes fog. Sometimes the addition of a drop of water to each ounce improves matters; but there is no absolutely certain remedy, except age or mixing.

A. B. C. (Brighton).—Enlarged coloured portraits will be admitted to the exhibition. A small print from the negative placed beside the picture will increase the interest. The plan of enlarging portraits and finishing in oil is generally approved by photographers.

L. Z. (Dublin).—We will remember your wish.

INDIGNANT writes to express agreement with our condemnation of the practice of employing informers to tempt photographic pirates, and a hope that Henry Evans will be released from prison. His aim is perfectly right, but the mere repetition of the protest in an anonymous letter will not effect anything, and the demands upon our space do not permit us to insert his letter.

GREAVES.—We have no means whatever of stating what chance of success our correspondent would have in America. We believe that photography there is generally in demand, and that capable men succeed; but what especial demand there is for printers in either carbon or silver we cannot tell.

NORMAN.—If the room were ours, we should certainly rebuild it with a north aspect, in order to save constant trouble. So far as the diagram is explicit, we should build it again much the same size and proportions. You do not state whether it has glass on both sides or only on one side, nor do you state the entire length. It is uncertain from your diagram whether there are fifteen feet of glass, or whether the fifteen feet includes the opaque space at one end. We presume that both ends are opaque. Nothing is so difficult as to give instructions in writing for arrangement of curtains. If you divide the sky-light into three or four blinds running on rollers at the ridge, and have one curtain for the side running on a wire at the eaves, and arrange these for each model until you see that proper light and shade is on the model, your pictures will be round and brilliant. But it is necessary to be able to see when the proper light is on the model to secure uniformly good results. The advantage of a well-arranged studio with north light such as we have often described is, that it is scarcely possible to get bad lighting. The card enclosed is pretty good, but suggests the presence of a little too much diffused light.

JEWEL.—The plan and proportions you describe are excellent. For all ordinary purposes you will have light enough from the north side; but the small glass space on the south may be useful occasionally, being ordinarily kept covered.

C. F. C. P.—It is very difficult to say which is *the best* dry process or *the best* mode of keeping a plate moist; there are so many able photographers, each pursuing a different method, each succeeding, and each believing his own plan the best. For preserving a plate moist for keeping an hour or two between preparation and development, there is no more simple plan than that of Mr. Blanchard. He employs a bromo-iodized collodion with a full proportion of bromide, and leaves it for a short time—say less than two minutes—in the silver bath, so that the whole of the bromide is not converted into a silver salt in the bath. The change still goes on after the plate is out of the bath, and the silver is thus prevented from drying and crystallizing on the film. Mr. Hughes's plan is to sensitize thoroughly, and then wash in distilled water; expose; and, before developing, redip in the nitrate bath. In each case a somewhat ripe collodion is desirable. Another good plan is to excite the bromo-iodized film as usual, wash well, and then coat with a one-grain solution of acetate of morphia to each ounce of which one drachm of Price's glycerine has been added. A plate prepared this way will keep some hours. Expose two or three times as long as for a freshly prepared plate. Develop with gelatino-iron silver solution and silver. For simplicity, probably the morphia process or the Fothergill process would take the palm.

JOHN STONE.—M. de Constant is still engaged in some experiments with his modified coffee process. He will publish as soon as he is ready.

H. S.—When we stated that the lens was quicker, but not otherwise better, we meant that it would produce equal results in less time. 2. The whole-plate of the A series, by the maker you mention, will answer well for groups. For enlarging, a quarter-plate lens of the same series would answer well, and also for card views.

OPERATOR.—If the collodion film leaves the canvas after transfer, it is because the surface of the canvas was not properly prepared. If it be first carefully treated with a hot solution of soda, and then with a weak solution of gelatine, and the transfer conducted as we described, there is no chance of its peeling. It will require hard scrubbing to get it off. For enlargements of great size, the head and upper portion of the body only need be transferred, the remainder may be painted-in. We have not much personal knowledge of any other method of enlarging on canvas, and there is always a danger of the permanency of any method which involves sensitizing, printing, and fixing on the canvas. If you wish, however, to try one, that of Mr. Davies (described in our last YEAR-BOOK) is, perhaps, the best. We cannot enter into detailed formulæ in this column, but if you state a specific difficulty in any process we can often help you out of the difficulty.

STEREO.—The examples of stereo mounting you forward are not quite properly done; but they are not so far incorrect as to interfere, to our eyes, with their stereoscopic effect. As a rule, it is better to have a very small portion more in the picture of the right side of the right eye picture, and of the left side of the left eye picture, in order to produce the best effect. In those sent, each half includes nearly the same objects, but the slight difference which does exist is in the wrong direction.

PHOTO (Rostrevor).—We fear that there is much empty boasting in the statement to which you refer. There is no especial secret in photographing on linen. We have published several processes in the NEWS, and have seen some excellent results produced thereby. Whether it can be applied commercially to any great extent we do not know. Mr. Pritchard's process, which produces excellent results, appears in our Eleventh Volume and in our YEAR-BOOK for 1868.

DRESS AT THE PHOTOGRAPHIC SOIREE.—Several correspondents on this subject will see that the question is settled in favour of morning dress.

Several Correspondents in our next.

Photographs Registered.

Mr. GRIFFITHS, Truro,
Photograph of Himself.
Mr. J. POBR, Stonehouse,
Photograph of Huysh Masonic Temple.
Mr. E. PHILLIPS, Ystradgynlais,
Photograph of Monument to late Rev. Rees Pryce.
Mr. THOS. TYLEY, Bristol,
Photograph of Monument to Major F. Reeve.
Photograph of Monument to Francis Scott Gray.
Messrs. W. and D. DOWNEY, Newcastle,
Photograph of Prince and Princess Teck, &c.
Mr. BAMPTON, Edensor,
Photograph of late Duke of Devonshire.
Mr. WHITEHEAD, Mossley,
Photograph of Rev. E. Minton.
Mr. J. SUNDERLAND, Birmingham,
Three Photographs of Father Gavazzi.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
Faded Daguerreotypes ... 517
A Simple Method of Transferring Carbon Prints ... 517
Echoes of the Month. By An Old Photographer ... 518
Want of Sharpness in the Negative as a Result of Working in a Warm Atmosphere ... 519
American Correspondence ... 519
The Tunicare Again. By Dr. Schnauss ... 521
Photographic Studies in Nature. By Dr. H. Vogel ... 521
Report of the Berlin Commission on Negative Varnishes ... 522
Notes on the Carbon Process. By Dr. Liesegang ... 523
Collodio-Albumen for Transparencies ... 524
Recent Patents ... 524
Correspondence.—Surface Finish for Photographs — Fixing Drawings in Lead Pencil, Charcoal, and Chalk—Developing Liverpool Dry Plates—Preliminary Coatings for Plates—Photographic Records of Artillery Experiments—Permanency of Daguerreotypes—Piracy and Copyright—Negatives from Negatives—Operators' Specimens ... 524
Talk in the Studio ... 527
To Correspondents ... 528
Photographs Registered ... 528

FADED DAGUERREOTYPES.

ON another page we print a letter from an old and esteemed correspondent, calling in question a statement in a recent article on copying Daguerreotypes, in which it was alleged that these pictures share with paper prints the "certainty of gradual decay and dissolution." The article in question was translated from a German source, and was published because it contained some information which might be useful to many of the present race of photographers who have no experience with Daguerreotype manipulations. But in relation to the intimation as to any want of permanency in Daguerreotypes, we agree emphatically with our correspondent, Mr. Reeves. A properly produced and reasonably preserved Daguerreotype is as permanent a form of picture as we know, and, in our estimation, as beautiful as it is permanent. The only qualification necessary to this general allegation of permanency would need to be made in relation to Daguerreotypes made before the introduction of Fizeau's process of gilding the image. We have seen pictures of this kind, which, not having been carefully protected, had become so much oxidized that the easily injured surface was readily attacked by the solution necessary to remove the accumulation of tarnish on the surface. The gilding, however, serves to protect the surface, both rendering the image absolutely permanent, and making the operation of cleaning, when necessary, a perfectly safe one. We think it worth while definitely to affirm this safety for the benefit of young professional photographers, whose limited experience may render them otherwise chary of dealing with a tarnished Daguerreotype when brought to them either to restore or to copy.

The operation of cleaning or restoring a Daguerreotype only requires care. We have restored many scores of them, some in deplorable condition, and we have never failed with any. The only risk is the use of a solution of cyanide too strong for the purpose. Unfortunately, the instructions which have been published from time to time rarely state the strength of the solution to be used. "A piece of cyanide the size of a bean in an ounce of water," is one of the instructions approaching as nearly to accuracy as any we have heard; but as beans vary much in size, the hint is, unfortunately, not sufficiently exact. In one instruction—the only one we remember to have seen with definite proportions named—a strength of five grains of cyanide of potassium to an ounce of water is given as the safe strength to work with. This is undoubtedly safe; and, with a comparatively slightly tarnished picture, it is efficient. But in some obstinate cases it is difficult with such a solution to remove the mixed coating of sulphide and oxide of silver mixed with unknown atmospheric deposits. It may be suggested: make up in time what the solution lacks in strength; the operation is best performed slowly. This is quite true, and, with a qualification, good advice. But it is at times difficult to get the cleansing operation to commence: the weak solution scarcely seems to touch the tarnished surface. After the deposit commences to dissolve, it generally goes on very quickly; and with a weakly gilded picture a strong solution will sometimes act so rapidly after it has commenced, that the lighter half-tones are attacked. In such a case, however, all risk of harm may be at once stopped by plunging the plate into a dish of water. Perhaps it is wise to try a five-grain solution, and if it fail, then try one twice the strength. We have generally employed a solution of at least ten grains of cyanide to an ounce of water, watching carefully the operation, and stopping it the moment the stains were removed. An important point in cleaning a Daguerreotype consists in getting the water to flow freely over its surface without the effect of greasiness or repulsion, which, in case of much atmospheric deposit, it rarely does on first application. We have found that a first treatment with alcohol is valuable in removing this tendency, free application of water following. After this treatment, we find that the action of even weak cyanide solution is much facilitated.

We agree with Mr. Reeves in regretting the entire abandonment of the Daguerreotype process in this country. In America they are still occasionally produced. The late Mr. Claudet, up to the time of his death, we believe, kept his Daguerreotype apparatus in working order, and occasionally produced portraits therewith for the stereoscope. We do not know of any one in England who would now undertake to produce a Daguerreotype. Many old photographers preserve their apparatus with a lingering affection; but success essentially depending on everything being kept in condition, no attempt is made to use it. We think that if an artist in London were known to produce good Daguerreotypes, it is not at all improbable that he might frequently receive commissions for such work. We fear, however, that no one will undertake the experiment.

A SIMPLE METHOD OF TRANSFERRING CARBON PRINTS.

ONE of the objections which have been alleged to exist in relation to the double transfer process in carbon printing is, the delay involved in waiting until the developed image is quite dry before it can be transferred to its final resting place. Both in Swan's and Johnson's method, after the image has been transferred to its temporary support and developed, it is customary to allow the image of insoluble gelatine to become quite dry before transferring it or mounting it on its final resting-place. The reason for adopting this delay has been the risk of losing sharpness if pressure were applied to the image whilst still in a soft and gelatinous state. Several methods of completing the operation without such waiting have been tried with more or less of success, but they have not come into general operation.

On a recent visit to the photographic department of the Royal Arsenal at Woolwich we saw the operations of carbon printing, by Johnson's process, carried out with considerable success. As regards the final transfer, however, a modification was often adopted, by which the picture, when necessary, was finished without waiting or delay of any kind. A number of prints having been developed on the zinc plates to which they are temporarily transferred by atmospheric pressure, to admit of development on the opposite side to that in contact with the negative during exposure, are placed on a rack to drain. When the first is surface dry, which occurs in a few minutes, the gelatinous condition of the image still, of course, remaining, it is placed again in a dish of water at a temperature of about 120° Fahrenheit, and a suitable sheet of the prepared transfer paper of the Autotype Company is placed in the same dish with it. In a few minutes the two are brought together, the prepared side of the transfer paper in contact with the image. They are lifted out, and pressed together with the squeegee in the usual manner. The zinc plate is now placed over a gas-burner, resting on a ring, and is gently moved about to diffuse the heat. The temperature acquired by the zinc plate during this operation is about 150° Fah. In a few minutes all moisture is driven off, and the mounted print detaches itself, and, curling up, peels off the zinc plate spontaneously and perfectly.

On comparison of a print treated in this way with another from the same negative, in which the transfer had not been effected until the image was quite desiccated and hard, no difference of any kind could be detected, the definition even of the finest lines being just as perfect in the print by wet transfer as in the other. Wherever time, therefore, is an element of importance in completing the operation, a perfect result may be secured without any delay whatever.

In all other respects the operations were conducted as we have before described; it is unnecessary, therefore, to repeat the details here. We may remark, however, that a remarkable degree of uniformity of excellence was observable in the prints produced: and no practical difficulties appeared to arise in the regular practice of the process at the rate of about one hundred and fifty or two hundred ten-by-eight prints a day.

* * *

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

The Forthcoming Exhibition and Soiree, and Evening Dress—Admission to the Exhibition—Photography and Law—Reproducing Negatives—Acceleration by Light—The Government and Science—Societies.

The forthcoming exhibition in Conduit Street has been a subject of sufficient interest during the last few weeks to augur well for its success. The subject of dress, to which I ventured, in my last "Echoes," to allude as involving one of the minor elements of comfort on the opening night, has, fortunately, been decided with reference to what I conceive to be the views and convenience of the majority of those most interested in the matter. Without considering here how far the "curiously bifurcated article," considered in English society *de rigeur* for the evening dress of gentlemen, is either universally becoming or comfortable, there are many cogent reasons why "full dress" should not be imperative on the occasion like the opening of our photographic exhibition. In the first place, the space is limited; and, as full dress amongst ladies often implies an amplitude of drapery and extent of train seriously detrimental to facility in moving about and examining the pictures, it of necessity impedes one of the primary objects of the exhibition. In the next place, many provincial photographers, contributors and otherwise, avail themselves of the occasion to visit the exhibition and meet friends amongst metropolitan photographers, and to these the dress regulation would act either as a serious inconvenience or a prohibition. In the next place—but I find that I might multiply reasons almost *ad infinitum*, and it is happily unnecessary. Visitors will be admitted in such attire as they conceive best becomes themselves and their convenience, in this respect having the same liberty permitted as at some of the most enjoyable *conversazioni* I know: those in connection with the Sketching Club in Langham Place.

One or two new regulations have been adopted in connection with the exhibition. It will be kept open until dusk every day during the whole of the month after the opening night. It is intended to be as free to the public as heretofore; but to facilitate—not to restrict—the visits of those interested, tickets of admission have been issued. These will be issued freely to members, who are invited to distribute them amongst their friends, so that they may serve as invitations to visit the exhibition. On Saturdays admission may be obtained without tickets on payment of one shilling, but the tickets issued by members admit on this as on other days freely. I cannot but think that this introduces an unnecessary complication. The great object of the exhibition is to enable photographers and the public to witness the progress of excellence in the art. The greater the number of visitors the better for exhibitors, the better for the art, and the better for the Society. Saturday is a day convenient to many persons for visiting such an exhibition, and I should have preferred to make that day free to the public without even the easily attained formality of a ticket. The payment of a shilling is not a serious barrier to visitors; but *it is* a barrier, which may check the visits of some. The day when photographic exhibitions can be made remunerative in this way is long since past, as the Society discovered to its cost in the last two or three of its regularly organized exhibitions at which payment was a condition of entrance. I heard a rumour of an intention to make entrance conditional upon the purchase of a catalogue. I was delighted to find, from the secretary's letter in your last, that such a condition was not announced. It would have been too paltry and petty a mode of dealing with the matter. The experience of last year proved that a very large number of visitors purchase a catalogue after they have entered and seen how much the exhibition contains to interest them. To have made such a purchase a condition of admission would have implied a doubt of the willingness to do so, or of the pictures affording sufficient inducement after admission.

What can be the reason that such a bitter animus against photography always seems to prevail in courts of law? Not very long ago a learned judge burst into a fierce tirade against photographs, implying that they were bad art and libellous portraits. I have noticed that if a photographer prefer a charge of piracy against another for copying his portraits, the chances are very seriously against his obtaining a remedy. In a case recently referred to in your pages, the judge, not the accused, elicited that two portraits were taken at once on one plate with a pair of lenses in one camera, and because only one of these nearly identical negatives were registered the plaintiff lost his remedy. This struck me at the time as straining the law in favour of the pirate. In the recent case of Mr. Knight there appears, if the reports can be trusted, an equal straining of the law against the alleged pirate; but in both cases it is the photographer who is the victim. In the recent cases of alleged piracy of copyright in pictures, very little pains indeed seems to have been taken to ascertain whether the copyright in such pictures had been obtained in legal form; the oath of the prosecutor generally being accepted as sufficient. His oath was probably made in good faith, believing that he did possess such copyright; and if the form were not quite according to law, why, then, so much the worse for the law. If I am not mistaken, prosecutions under the Fine Art Copyright Act have repeatedly been instituted for the piracy of paintings which had been painted and sold before the Act came into existence. I do not doubt for a moment that the owners ought to have a legal protection to their property; but it is doubtful morality to fine and imprison men under sanction of a law the provisions of which they have not broken. Prepossession and prejudice, unfortunately, will always govern all human affairs, the administration of the law not excepted. And when a well-known owner of fine art copyrights, represented by his well-known attorney, makes a charge of piracy, it seems to be taken for granted almost that the accused is guilty, an impression not in the slightest degree ameliorated when a gentleman universally associated with the defence of piracy rises to offer his well-worn arguments on the general question, as well as to point out the insufficient evidence in the particular case in hand. I have no sympathy with piracy, and am half afraid that I feel some gratification on the conviction of one manifestly living by piracy, even if the legal points of the evidence be a little shaky. But I must confess that, were I charged with piracy, I should be represented by an advocate whose name was not already intimately associated with the defence of actual pirates.

The question of reproducing negatives, to which you have recently referred, is, doubtless, a very important and interesting one, and it is undoubtedly true, as you have remarked, that reproduced negatives are generally very much inferior to the originals. There is one process in which it has occurred to me, however, that reproduced negatives might with great advantage be more frequently employed than at present: I mean in the process of enlarging. If an enlarged print on paper were first produced, retouched where necessary, and then a negative on paper produced by contact printing, very fine results might be produced. I have seen this done with advantage, the slight texture in the paper in nowise interfering with either definition or delicacy of gradation, and in some cases producing a slight texture by no means unpleasing.

The question of acceleration by means of light—either white, red, or yellow—appears to me to be one of those which better deserve the investigation of a trustworthy committee than most of the subjects submitted to such examination. The statement of this possibility as a fact, which has been verified by men like M. de Constant, whose dictum is beyond question, and the well-known experiments of very early investigators, surely ought to secure for the subject a consideration as serious as the great value of such a boon deserves. I have myself, in common with many others, at various times had occasion to verify the fact that diffused light would produce acceleration, but it was at the risk of some approximation to fogging. The recent statement of M. Constant, that red light, whilst accelerating, gave greater richness and vigour to the negative, is a startling statement. I hope, at least, that some of your experimental readers will test this, and report thereon.

And so it seems that England is actually to be unrepresented—at least, by an expedition aided by Government—in observing the forthcoming eclipse. Some of the members of the liberal and economic government which, I suppose, we ought to be so proud of possessing, seem to think that if science is not strong enough to progress upon its own legs, it had better remain where it is. It is fortunate for the world's progress that such economic governments do not prevail everywhere. America will send a much longer distance to observe the eclipse, and has, I believe, offered to give facilities to English observers joining the expedition. Amongst the items of private expenditure of that flagitious ex-ruler of France whom almost all the world just now feels such pleasure in railing at, I find a sum for the encouragement of art and science amounting to upwards of ten millions of francs; and the names of men like Foucault and Regnault are amongst the recipients. English science would be startled out of its propriety to find names like those of Faraday, Lyell, Tyndall, and others of the same class, the recipients of bounty or favours from the royal purse.

The societies have recommenced their meetings. The South London had an excellent paper from Mr. Croughton, on a well-worn, but never stale, subject—the relations between photography and art. The Manchester Society held its annual meeting, and the Liverpool and Edinburgh Societies have held good meetings, which my space does not permit me, however, to notice further.

WANT OF SHARPNESS IN THE NEGATIVE AS A RESULT OF WORKING IN A WARM ATMOSPHERE.

The *Photographisches Archiv* mentions some curious instances in which it has been found that warm currents of air have interfered with the sharpness of a negative in certain parts. It says:—

"A stereoscopic negative we have just received from a correspondent, representing one of the naves of the Cologne Cathedral, exhibits a peculiar kind of unsharpness. The negative is, on the whole, free from fault, the near and distant objects being exceedingly well focussed; but on one particular spot, curiously enough in the middle of the nave, certain objects appear blurred, which, moreover, could not by any possibility have been moving during the exposure.

"The explanation offered of the circumstance is as follows. During the exposure one of the panes in the large stained window was opened, and thus allowed a warm beam of sunshine, remarkable in the negative, to enter the interior of the cool cathedral, and, as it is precisely in the neighbourhood of this ray that the unsharpness is observable, it stands to reason that the warm air in that locality must have been set in motion, and, consequently, have blurred the objects situated behind it during the long continued exposure.

"The effect of motion which objects exhibit over a fire has, doubtless, been observed by every one, and the same phenomenon may also be seen in the neighbourhood of a warm stove; and there is no doubt that the sunbeam exerted upon the cool atmosphere of the cathedral a similar effect, which was reproduced in the camera.

"A blurred effect, identical in nature, we have remarked in a landscape picture, and in this instance we found, on enquiry, that a short time previously to the photograph being taken, a large amount of slag from a cupola-furnace had been allowed to flow out upon the earth near at hand."

An instance of the kind mentioned by the *Archiv* came under our own notice a few years back, when a photograph of a massive forging was required to be taken in the Royal Arsenal at Woolwich. The metal cylinder of which the forging consisted had been withdrawn from the furnace some twenty hours before any essay to depict it in the camera was made, and yet, after the lapse of this interval, it was found impossible to obtain the upper outline sharply defined, owing to the effect of the warm iron upon the atmosphere.

AMERICAN CORRESPONDENCE.

Chemical Retouching—The Production of Proper Negatives for Retouching—Photographic Exhibitions—Photographing the Protuberances on the Sun without an Eclipse.

Chemical Retouching.—You have already published Mr. Lea's suggestions on manipulating negatives that have too great contrasts, so that more excellent prints may be obtained from them. I refer to his suggestion to "coat the back of the plate with a sensitive mixture, expose briefly to direct sunlight, the face to the light" and thus to print the negative "on its own back," thereby securing "a positive superposed on a negative." While I have not had time to test the matter practically as yet, I think it will be conceded that the suggestions are practical, and that in careful, skilful hands they will prove very valuable. Photographers are now working to secure softness and gradation of tints, rather than that "cast iron sharpness," which seemed to be the height of their ambition only a year or two ago, and the results of their labours are much more pleasing and pictorial. Here, then, I think, is a great helper offered them, and not only is it useful for improving harsh negatives, but it has other advantages. Freckles are softened, if not driven out of sight entirely; scratches and pinholes must be almost or quite annihilated by it; the faintest details in the shadows will be awakened and brought out to do their share towards producing harmony; and withal, prints of peculiar beauty must be the product of negatives so treated.

Mr. David Duncan writes me that he has for some months made actual trials of a method similar to the one proposed by Mr. Lea, and as he has reduced the thing to practice, I cannot do better than give your readers the benefit of his experience, which he has so kindly furnished me. He writes as follows:—

. . . . "The idea is deserving of careful attention by all engaged in our profession. I experimented in the same direction at least six months ago, but did not then succeed with any negative which was to me satisfactory, for the following reasons. First, collodio-chloride was troublesome, and entailed the necessity of first coating the plate with thick albumen, otherwise the collodion film would slip off. The operations succeeding the printing—*i.e.*, washing, toning, fixing, &c.—were not advantageous to the negative itself, no matter how thickly it was varnished. Second, bichromate of potash and gelatine took too long to dry to render that *modus operandi* commercially available. And third, gum-arabic and a bichromate salt proved a complete failure, as the whole will wash off after printing, unless, of course, the plate is coated with a thick substratum of gelatine or albumen. The methods suggested by Mr. Lea, therefore, are impracticable for ordinary operations, where speed is the necessity of the day.

I have a method to offer which is simple, expeditious, and under control, as follows:—

After the negative is fixed and washed, flow with a thick solution of albumen, say—

Albumen	1 ounce
Water	4 ounces

and dry. When dry, coat with iodized collodion, sensitize in the bath, and, to expose, put the plate in the dark slide or plate-holder of the camera-box reversed, the film uppermost; place a small piece of glass at each corner, and gently lay on those pieces a plate of glass the same size as the negative, which will preserve the sensitive plate from injury. Now close the plate-holder, and expose to the light a few seconds by drawing out the slide. It will be understood, of course, that the sensitive film is on the collodion side of the negative, and not on the glass, so that a transparency is really printed in close contact. After exposure, develop with the ordinary developer; wash, fix, dry, varnish, and the whole is complete. The transparency on the negative will not need intensifying, and will rarely be too dense by the application of the developer alone. The intensity, however, can be reduced by the application of cyanide of potassium if necessary."

The Production of Proper Negatives for Retouching.—Some photographers seem to look upon negative retouching as a great labour-saver, by the use of which they may cover up their faulty manipulations, and cease to expend any great pains upon their negatives. Others, who are more thoughtful, advocate the plan of producing negatives as chemically perfect as it is possible to produce, and then, by the retouching process, improve upon them wherever it is possible. At the last meeting of the Pennsylvania Photographic Association the subject was discussed considerably, and a paper read by Milbin Bell, illustrated by negatives and prints, to prove that a proper negative for retouching needed to be made in a peculiar way, and with a great deal of care. He took as his standard the beautiful photographs from retouched negatives which we get here from Messrs. Lœscher and Petsch, Milster and Grasshoff, in Berlin, and proceeded to show that they were negatives not made in the usual way. "I am convinced," he says, "that the Berlin negatives are weak after developing with iron, but well out in all their details, forming only a good basis for strengthening and colouring or toning up to the required printing strength. To imitate them I proceed as follows:—

"I use cotton giving but little intensity, and not more than three or four grains to the ounce of mixed ether and alcohol. The plate must be well exposed, and when developing flow the developer over the plate so as to wash off most of the silver. Develop as long as any details will come in the shadows. Wash well, and develop with a weak solution of pyrogallic acid, adding a few drops of the silver solution; *i. e.*—

1.	Pyrogallic acid	1 grain
	Citric acid	5 grains
	Acetic acid	10 drops
	Water	1 ounce
2.	Nitrate of silver	5 grains
	Citric acid (sol.)	10 drops
	Water	1 ounce

Develop until the right intensity is secured; wash, and fix. Wash after fixing again, and tone in the gold and hypo bath as follows:—

1.	Chloride of gold (neutralized) ...	15 grains
	Water	16 ounces
2.	Hyposulphite of soda	60 grains
	Water	16 ounces
	Salt	40 grains

Always add the gold to the hypo solution drop by drop, shaking after each addition. Let the negative remain in this toning solution until it assumes a proper colour; then wash well, dry, and varnish.

"To retouch the negative, moisten a little cotton-wool with

Turpentine	1 ounce
Balsam of fir...	20 drops

Rub over the negative, and then wipe it dry with a clean bit of cotton. By this means a ground is secured, to which the pencil marks will readily adhere. Work up the negative more by dots than by strokes, rubbing it well now and then with clean cotton. Finish with Prussian blue when the pencil fails to answer."

The negatives shown by Mr. Bell were very convincing evidence of the utility of his method, and produced excellent prints, fully equal to those he tried to imitate. I may be able to send you some for your coming exhibition.

Photographic Exhibitions.—Speaking of your annual exhibition, so soon to open, reminds me of several that are now open here. At the cities of New York, St. Louis, Cincinnati, and Baltimore, in connection with the exhibitions of American manufacturers, are very fine displays of photography. The value of such exhibitions is incalculable; and photographers are beginning to appreciate and understand that fact. I need not enlarge, however, for English photographers seem to be well up in that direction, I am glad to see. I understand you are to have a small collection of American pictures at your Conduit Street exhibition, and I very much hope that English photography will be very largely represented at our National Exhibition in June next, for we cannot expect much from France and Germany.

Philadelphia, Oct. 15th, 1870. EDWARD L. WILSON.

THE TUNICARE AGAIN.

BY DR. SCHNAUSS.*

A FEW days ago the respected editor of the *Archiv* forwarded me a further and larger sample of tunicare, consisting of several ounces, in order that a more precise examination of it might be made than was formerly the case. It is, I may mention, always a difficult, if not occasionally an impossible task, to examine into and separate any organic mixture consisting of unstable and not volatile substances, which exist, moreover, in a very dilute condition.

In the first place I carefully distilled off one ounce of the tunicare. The distillate again contained nothing but water and alcohol. After boiling for a quarter of an hour the perfect separation of the albumen, which was thrown off in white flakes, was taken for granted, and the remainder of the liquid, about two-thirds of the original quantity, was therefore filtered, and evaporated to dryness for further examination. There remained then a small brownish residue, of the nature of an extract, smelling much like, extract of meat, and giving evidence of containing nitrogen on being carbonized. The extract gave a slight alkaline reaction (the tunicare is neutral, possibly on account of its very dilute nature), and an aqueous solution of it yielded with tannic acid a precipitate presenting the characteristic qualities of gelatine. When perfectly carbonized, a small quantity of a strongly alkaline substance, white in colour, was obtained, which proved to be lime.

I refrain from entering into the particulars of the further combinations, but, by way of controlling my experiment, examined several solutions of albumen, partly with and partly without admixture of gelatine, together with some alcohol, and, in one instance, mixed with a little lime water. The latter, as may be supposed, exerted a turbid effect upon the mixture, but the filtration of the liquid through paper was easily effected at a temperature of 20° Reaumur. It is well known that many makers of albuminized paper employ alcohol in small quantities for mixing with the albumen solution, to render it more fluid; a little precipitate is thereby caused, it is true, but the same is easily separated, either by beating up the albumen to a froth, or by filtering it.

Mr. Wharton Simpson, in referring to my first report on tunicare, alludes to my statement of the slightly acid reaction exhibited by the sample. This I considered of little consequence, and attributed it more particularly to the fact of the liquid being contained in an imperfectly cleaned bottle. That I was right in my surmise is proved by the second sample of tunicare, which proved to be quite neutral. It was only when the brown residue was obtained from heating the distillate, and after removal, therefore, of the alcohol and albumen, that a distinct alkaline reaction was apparent.

PHOTOGRAPHIC STUDIES IN NATURE.

BY DR. H. VOGEL.

UNDER this title I am about to describe a peculiar branch of American photography, which can scarcely be classed under the head of portraiture, nor under that of landscape photography, although partaking of the nature of both these arts. The particular calling to which I refer, I saw practised for the first time on my visit to the world-renowned Niagara Falls. I had just discovered the best point of view, whence a superb panorama of both falls is obtained, together with a glimpse of the Canadian and American shores, and had become wholly absorbed in the contemplation of this grand scenic effect before me, when a gentleman courteously approached and greeted me in a pleasant manner; he carried a band round his hat inscribed with the word "photographer," and asked forthwith if I desired my portrait taken then and there, calling attention, at the same time, to a complete gallery of panotypes and paper pictures of different sizes hung up on the surrounding trees. In close proximity, under some foliage, stood a stereoscopic camera ready for work, together with other arrangements, all of which I had an opportunity of examining while inspecting the falls. The pictures were in themselves somewhat original; they presented individuals and groups posed in the ordinary methodical manner, and supplemented by a little modern furniture, with a background composed of the wonderful Niagara Falls, taken from nature itself. The fact, however, of everybody turning his back upon the falls—the sole object which had brought the sitters there—had a very curious, if not humorous effect upon the spectator. An artistic result, however, was probably little cared for, as the great aim, undoubtedly, of the owner of any such productions would be that of showing it about as a picture of himself when visiting the Niagara Falls; and, indeed, the possibility of securing one's picture on so renowned a spot was evidently regarded with favour, and adopted largely by the public, for the photographer in question informed me that he had to pay a heavy rent, something like four hundred thalers (sixty pounds) for the season of three months.

Taking all things into consideration, the operator managed to employ his natural background very fairly. The camera stood on a raised pedestal constructed of a few boards, so that it looked down upon the visitors and the cascade; a wooded island—Goat Island—agreeably breaking the bright sheet of water. According as the living models were habited in dark or light costumes, so they were photographed against the water or the island, and thus an effect of relief secured.

A few trees surrounding the locality sheltered the spot from the direct rays of the sun, the lens employed by the photographer being one of Darlot's with medium aperture. Of course it was only the persons in the foreground that were rendered sharply in the picture, and in no instance was the waterfall itself perfectly in focus. The exposure necessary was about two seconds, and the fee for a picture of cabinet size was one dollar. The spot was very largely visited, and the operator was, therefore, sometimes compelled to include in his picture strangers, whose presence therein the owner objected to, and these, consequently, required subsequently to be touched out.

Another humorous feature of the matter may be alluded to: the nature photographer at Niagara had an opposition on the other side of the falls, some three or four hundred yards distant, who did not, however, by any means enjoy such good natural advantages; and when it happened—as it did, indeed, not unfrequently—that both were operating at the same time, both cameras being directed towards the falls, the one photographer, of course, photographed the other from the opposite bank. Fortunately the interval between the two cameras was somewhat great, and objects in the distance, therefore, rendered very small.

These studios in nature are not only to be found in the neighbourhood of the Niagara Falls. Upon Mount Washington, some 6,800 feet above the level of the sea, I found another. The operator here had often to do battle with the clouds, which frequently enveloped his apparatus, sitter, and self completely; as a background he used the hut situated at the summit of the mountain.

More romantically placed even than this operator, I found another upon the White Mountains. He had contrived a studio in a rocky defile, in which he certainly would never have cause to complain of too much sunlight; and here, in the vicinity of a mountain torrent rushing down from the rocks above, he pursued his avocation. Uprooted pine trees and stupendous boulders covered the earth, and the rugged rocky walls formed an admirable background for portraits. The pose was naturally of some duration, owing to the sombre character of the locality. The fee here was also one dollar, which was paid in advance, the picture being subsequently forwarded to its owner's address.

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* *Photographisches Archiv.*

Finally, I encountered another studio of like nature at Saratoga, the American Baden Baden, if one may so call it. The background here employed was the water-source, or well, round which many persons congregated to drink the waters. Here only panotypes were taken, produced upon a lacquered metal surface, possessing the advantage of being readily finished, and capable of immediate delivery. The operator worked with a fourfold lens, so as to obtain four images at once.

I know not whether these kind of nature studios exist in Germany; if they do not, these lines may possibly be a useful hint. In Southern Germany especially there are many points of interest where such things might be established, and where, doubtless, a thriving business might be conducted during the summer time.

Rutland, North America, July 16th, 1870.

REPORT OF THE BERLIN COMMISSION ON NEGATIVE VARNISHES.

The following report has been drawn up in compliance with the wishes of the members of the Berlin Society for the Advancement of Photography, and its importance will be at once apparent when we state that the experimental investigations were carried on over a considerable period, and that the following well-known gentlemen were members of the commission, viz., MM. Petsch, Grasshoff, Quidde, Schuler, Junghans, and Prumm.

In reporting the results of our investigations, we would, in the first place, desire it to be known that we do not in any way consider our labours as being completed; but, on the contrary, we are ready to declare ourselves a permanent body, ready to investigate any future improvements in the manufacture of varnishes or analogous substances, and thus to vulgarize and render practical any novelties that may hereafter be made known.

We believe we shall be taking the best course if we enumerate briefly the deductions resulting from our experiments, and then express a few words of practical information. In the first place, then, it is found that the different descriptions of glass influence very materially the question of photographic varnish. The reason of this behaviour of the glass is not so much its elasticity, as the more or less polished surfaces which it exhibits in various forms. This surface is least adaptable to varnish when smooth, and mostly so when in a roughened state; thus it will be seen that polished plate glass can under no circumstances be recommended for photographic purposes, and the same may almost be said of the Belgian plate, which, although not polished, is stretched out upon a perfectly smooth surface in the course of manufacture. The most suitable is the so-called Rhenish, which is already extensively used in Germany for photographic plates.

In regard to varnishes themselves, we may next remark that it is very difficult, if not almost impossible, to deliver a sound judgment upon a varnish put together in a certain specified manner, for not only do the variations of temperature during the operation of varnishing affect the film in a marked degree, but very much also depends upon the exact amount of moisture contained in the air at that time.

In regard to the temperature, it may be regarded as a rule that the operation should not take place in a very warm locality. Forty degrees Reaumur is, perhaps, the best average temperature to work at, but the same must be lowered the more water there is contained in the atmosphere. The collodion film has a very great hygroscopic tendency, and contains, even in a dry state, a certain quantity of water. This moisture, as likewise that which condenses from the air on the cooling of the plate, will render the varnish more tenacious, and will go far to improve the tough consistence of the film. If the film, by lengthened preservation in a moist atmosphere, becomes brittle and amorphous in its nature, the original qualities may generally be brought back by submitting the plate to a warm and equal temperature.

For a like reason it is also of great importance to add to the varnish itself a certain quantity of water; pure alcohol varnish would probably dissolve away the collodion film from the varnish altogether. A more considerable percentage of water is, indeed, added at the present time than was formerly the case, the quantity varying from eight to eighteen per cent. If more than eighteen per cent. of water is added, the etherial oils of the varnish soon lose their solubility, and thus give rise to defective results, a result which teaches us that it is not safe to employ a spirit of less than 86 per cent. strength for the preparation of varnishes.

We will now proceed to the composition of varnishes, and would, in the first instance, remark that a varnish seldom comes into the market which consists only of one gum or lac in solution; it is, on the contrary, an almost universal custom to employ a solution of several lacs, or, at any rate, to mix with the solution of a gum certain fatty and volatile oils. The greater number of varnishes in commerce are chiefly made up of gum sandrac, and possess, therefore, all the advantages and disadvantages peculiar to that gum. It is, for instance, as easily soluble as it as easily becomes brittle, and mixes with other bodies as readily as it may again be separated in an amorphous condition.

The commission, therefore, feel themselves compelled to protest against the use of varnish based mainly upon gum sandrac, in the same manner as plate glass has been prohibited by them.

Much more valuable are the qualities of mastic varnish, although, unfortunately, a varnish containing large quantities of this gum in solution is rarely to be met with in commerce, by reason of the high price of the material. Frequently we may find mastic gum mixed with sandrac and shellac, and with this combination very excellent results are obtainable; in this category belong the Beseler mastic varnish, the Junghans varnish, the Grasshoff varnish, and others.

Recently shellac varnishes have been much resorted to in photography; in making them up, however, a fault is frequently committed by adding the shellac in too small a proportion, and employing, indeed, the bleached gum for the purpose. This bleached shellac has, during the process of bleaching, suffered an entire change in its nature, becoming of a brittle and powdery character, and damaging a varnish, therefore, on admixture, more than improving it. It is totally different, however, with the light orange shellac, which enjoys all the good qualities of a suitable gum, and is confidently recommended by the commission for the preparation of excellent varnish. The valuable qualifications of such a shellac varnish are, moreover, increased by the addition of a small quantity of boiled linseed oil, which must, however, be in the first place dissolved in strong alcohol; other substances capable of addition are turpentine and etherial oils.

Shellac varnish is of an extraordinarily dark appearance, and it is doubtless to this pronounced colour that its lack of popularity is due. It was feared, probably, that the tint would exert considerable influence in the operation of printing, but many experiments have shown that this is far from being the case.

As regards another description of varnishes—as, for instance, the benzole, chloroform, and those generally which are rendered soapy with water—the committee cannot just now pronounce an opinion, inasmuch as sufficient experience has not yet been gained in the subject; a special investigation and further report on this matter will, therefore, have to be made.

At the commencement of our labours, not only was the solution of the question as to the best description of varnish capable of resisting the effects of heat and cold, moisture and dryness, put before us, but we were also requested turn our attention to the subject of retouching, in order to throw some light upon a suitable varnish or film for manipulation with the brush or pencil.

The opinion as to whether a varnish possessing a hard polished surface, or one of a rougher description, is the more suited for retouching, is, we know, divided among photographers, as in this case, as in many others, that with which one is most familiar is preferred. Both views may, however, be met by employing a gum which, while yielding a hard polished surface, is yet sufficiently tough to be ground with pumice or cuttle-fish powder. The compound mastic varnishes which have been tested by us combine these qualifications, and are very well suited to the purpose. At the same time we must mention that, notwithstanding the high polished surface of pure shellac varnish, that compound is little suited to the purpose, by reason of its being unsuitable for the operation of grinding.

A more advantageous mode of proceeding, when retouching is to be resorted to, is to employ a preliminary solution to the collodion film prior to its being varnished. This preliminary solution consists either of amber varnish such as M. Grasshoff has for some time past recommended, or of a watery solution of gum arabic or dextrine; a solution of albumen has also been recommended for the purpose. The amber varnish may be purchased in commerce, and consists of a solution of amber in chloroform, &c., so that when the alcoholic varnish is subsequently applied, the retouching does not suffer in any way. The watery solution of gum arabic should on no account be employed, on the one hand because the gum easily becomes acid, and thus destroys the plate, and on the other hand because, on drying, it becomes quite glassy.

A very valuable film is obtained by the use of a solution of yellow dextrine, the same being prepared in the proportions of one part of dextrine to eight parts of water. The white dextrine obtained in commerce should be avoided, as it dissolves with difficulty, and contains a perceptible quantity of acid. The dextrine solution is applied to the plate while still moist, and the latter may then, on drying, be varnished in the ordinary manner. If preferable, the retouching may be effected upon the dextrine film itself; but, in this case, it is well to give the plate a double application of the solution. With a preliminary coating of this dextrine the negative is easily worked upon, as the varnish subsequently applied need not be so concentrated as usual, and thus yields but a thin matt film. The dextrine solution—as likewise the amber varnish—impart, moreover, to the plate a more perfect protection against atmospheric influences; and we sincerely trust that a more extended period of time than that which was at our disposal will confirm the favourable results which have up to the present been obtained. If plate glass is employed for negatives, the application of the dextrine solution will be found to be especially advantageous.

The foregoing are our experiences of the different varnishes with which we have experimented; and, in conclusion, we will briefly state the manner in which our researches have been conducted. Two periodical sittings of the commission were necessary to determine the value of the results obtained, the second meeting being the more important one. The deteriorating influence of time it was, in the first instance, contemplated to bring about in an artificial manner; but, as many difficulties would have to be overcome, it was decided to base one's conclusions upon known observations, and to proceed upon such data. The work was carried on in a very systematic manner, the first investigation being the behaviour of different descriptions of glass in comparison with the various varnishes. Every member received specimens of glass of similar quality, and also various varnishes, and was thus enabled to work individually on a pre arranged method. The results were afterwards made known at a meeting, and the conclusions therefrom deduced. With the experimental plates, the influence of a moist atmosphere was afterwards observed. The plates were partially covered with wet filter-paper laid upon the reverse side, so that the moisture could be readily absorbed by the varnish surface. Scratching tests with sharp instruments were then instituted, and the toughness of the film thus ascertained. By subsequently heating and exposing the plates, some very interesting results were obtained, as likewise by employing the varnish in different states of dilution. After the most suitable kind of glass had been chosen, seven different varnishes were tested upon Rhenish plates, some of them being moistened by means of water, and others by exposure for a period of eight weeks in the open air. In every case, however, it was arranged that each member should conduct an individual experiment, and should be quite independent in his operations.

Finally, the quality of varnishes for intermediate coatings was tested in reference to their tendency to absorb moisture from the atmosphere, and with these experiments the labours of the commission were for a time at an end.

NOTES ON THE CARBON PROCESS.

BY DR. LIESEGANG.*

For some time past we have been employing, with considerable success, a chrome bath, for sensitizing tissue, containing a proportion of ammonia. The bath is prepared by dissolving one part of bichromate of potash in thirty parts of water, and adding thereto so much fluid ammonia as is required to convert the orange-yellow tint of the liquid into that of a pure yellow. The appearance of this yellow colour proclaims the transformation of the salt into the double chromate of potash and ammonia.

The pigmented tissue sensitized upon a bath of this nature possesses several advantages over that prepared in a solution without ammonia. It may be preserved for a somewhat longer period, and—after printing, and moistening in water—possesses a more adhesive surface, a circumstance of some importance in the Johnson process, where the tissue is required to adhere to a glass or metal plate. This advantage is the greater from the fact that the tissue must not be allowed to soak for any length of time if it is desired to render it adherent in the ordinary way, but must be rapidly immersed, freed from air-bubbles, pressed upon the plate under water, and then passed between sheets of blotting-paper. From being compelled to work thus rapidly, it not unfrequently happens that air-bubbles remain between the paper and the plate, a circumstance almost unknown when working with an ammonia bath.

Instead of adding the ammonia to the bichromate solution, the double salt itself may be at once dissolved in water. But, irrespective of the costly nature of this salt, it should be mentioned that genuine double chromate of potash and ammonia is rarely to be met with in commerce. The compound generally sold under that name is obtained by evaporating a solution of bichromate of potash neutralized with ammonia; and from the fact that the operation of evaporation causes the loss of much ammonia, the substance which crystallizes out is simply a mixture of single and double chromates. By repeated evaporation it is even possible almost to obtain therefrom a pure bichromate of ammonia. A preparation of this kind is generally of a red colour, whereas the single chromates are all of a yellowish tint.

Another point we here take an opportunity of alluding to. In our investigation of the simple chromate salts—potash, soda, lithium, and ammonia—we have never been successful in obtaining sensitiveness by their aid, if we except that of the ammonia salt; and such qualification, we find, is enjoyed only by those chromates which effervesce and assume a greenish tint on being heated, as is the case with all soluble compound chromate salts and the simple chromate salt of ammonia. This result would seem to be in contradiction to the recommendation of Dr. Van Monckhoven, to employ simple chromate of potash for sensitizing the gelatine in the Lichtdruck process.

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* *Photographisches Archiv.*

As the pigment paper, after sensitizing, dries but slowly, and must not be desiccated by artificial heat, the same should be prepared the day previously to its being printed. The tissue may not, however, be kept for any notable period, as, gradually, the surface of the gelatine film becomes insoluble, a circumstance easily perceived by the fact of the film refusing to adhere well to the plate, and by the presence of a grey deposit over the whole surface of the picture after development. A similar effect is produced if the tissue has not been perfectly shielded from light during the operations of sensitizing and drying, or if not afterwards preserved in complete darkness. It should, indeed, be borne in mind, that pigment tissue is much more sensitive than ordinary albuminized paper when silvered; for in printing it is sufficient sometimes to expose but for the period of a minute during full sunshine; in diffused light it must, therefore, be also comparatively more sensitive.

It is only on development that defects of this nature become visible, and they are, therefore, not so striking or so readily guarded against as similar faults upon albuminized paper, which is, in fact, only then thrown away as unfit for use when its pristine whiteness has changed to a deep yellow or violet tint.

COLLODIO-ALBUMEN FOR TRANSPARENCIES.

Mr. H. T. Anthony, in the *Photographic Bulletin*, says:—

"One of the great spheres of either the albumen or collodio-albumen processes is in the production of the best glass transparencies. The methods of the best makers are kept secret, but they are generally understood to be albumen processes. There have been published, from time to time, various modes of working, but very few persons seem to have succeeded in producing really first-class transparencies except Messrs. Ferrier, Leon and Levy, and Negretti and Zambra. All attempts to produce, by the collodion processes, results similar to those of the above makers, have been failures, although it is possible to produce very good results by them. The nearest approach to the delicacy and vigour combined of the albumen work has only been attained by the collodio-chloride process. But this can hardly be called a collodion process, as it depends for effect upon the coating of albumen which underlies the collodion.

"A very good result may be produced by the collodio-albumen processes. These, it is hardly necessary to say, consist in first coating the plate with collodion as usual, exciting it in the silver bath, washing off the excess of silver, and the flowing the surface with iodized albumen. The excess of albumen is not used again, but thrown away. Ordinarily it is best not even to allow the first coat of albumen to flow more than once over the plate, as by so doing stains and markings are produced; it being poured off, a second coat is applied, and then the plates are set up to dry in a place free from dust. The plates are now insensitive to light, and can be kept anywhere where it is convenient. When required for use, they are dipped in another silver solution, say forty grains to the ounce of water, strongly acidulated with glacial acetic acid. After half a minute's immersion the plates are well washed off in the dark, and put away in the dark to dry. When dry, they are exposed under a negative in a pressure-frame, and developed with a strong solution of gallic acid.

"Our object in especially enlarging upon this subject is to suggest that the albumen positives seem to us the only kind of positives by means of which new negatives of good quality can be produced. As it occurs frequently to most photographers that a mode of reproducing negatives would be very desirable, we desire to recommend their acquiring a facility in using these processes with that view."

[We feel satisfied that if Mr. Anthony will carefully try the collodio-chloride transparency for reproducing negatives, he will find it quite equal to the albumen transparency. Further, we may remark that, in our experience, the notion that the collodio-chloride is dependent for its effect on the preliminary coating of albumen is altogether erroneous. From the time we first worked out the process until now, we have never used a substratum of albumen, nor felt the need of one; and we have obtained results as perfect as the most fastidious could require.—Ed. Photo. News.]

Recent Patents.

PHOTOGRAPHS ON TEXTILE FABRICS.

BY C. JANICOT.

The following specification describes a method of producing photographs on various textile fabrics:—

This process consists—

1st. In preparing and sensitizing a tissue or fabric of silk, wool, cotton, or other like material, and in producing directly upon the fabric thus prepared a photographic image by the usual processes.

2nd. In rendering the photographic proof on the said fabric transparent by means of wax, oil, or fatty body, varnish, or other suitable material, and, by preference, paraffine.

3rd. In painting the reverse side of the fabric thus made transparent by following with a brush or pencil all the lines of the photographic image which is fixed thereon, taking care to see, by examining the obverse side of the fabric—that is to say, the opposite side—if the picture is a good and true reproduction of the object copied.

4th. When the painting is finished, in rendering the fabric opaque by covering the dry painted side with a layer of opaque colour, or by pasting the painted fabric on paper, non-transparent cloth, or other opaque surface, so as to intercept the transparency of the coloured image.

5th. In then fixing or mounting the fabric bearing the photographic picture in a frame, or otherwise, as is done with an ordinary picture; there is thus obtained a painted cloth or surface on which the painting applied on the reverse side to the photographic image appears on the obverse side by the direct transparency of the fabric.

My process of obtaining photographic paintings or pictures on fabrics has for its chief characteristic the utilisation, by direct transparency, of the effects or result of painting applied by a pencil or a brush on the reverse side to the photograph fixed on the fabric which has been rendered transparent.

The novel features in my process are—

First.—The transparency produced by the substances mentioned of the fabric previously prepared and sensitized, and on which the image or picture has been fixed by the usual processes adopted in photography.

Second.—The application of painting to the reverse side of the fabric by following (taking advantage of the transparency) the lines of the photographic image which is on the obverse side.

Third.—The covering of the dry painting with an opaque coating, or the pasting of the reverse side of the fabric on paper or other opaque substance to intercept the daylight.

Fourth.—The production of a photographic painting on a fabric, allowing to be seen on the obverse side, by direct transparency, the painting produced on the reverse side.

Or the painting can be applied on the image or picture itself, and a like effect is produced on the other side, and a reverse image is obtained.

And having now described the nature of my said invention, and in what manner the same is to be performed, I declare that I claim—Producing photographic pictures on tissues or fabrics by the means and in the manner hereinbefore described.

Correspondence.

SURFACE FINISH FOR PHOTOGRAPHS.

Dear Sir,—"A thing of beauty is a joy for ever," but I fancy innumerable of our cartes-de-visite fail to leave the above mpression. After a few months' career the beauty and freshness (nothwithstanding what has been said to the contrary) soon gradually fade away, leaving us but a shadow of its former self.

Some time back somebody suggested varnishing as a remedy; that answered till enamelling drove the tacky varnish from the field. Then somebody else thought of wax in benzole, which certainly answered some purposes. And now we have the encaustic paste, which is supposed to supersede all previous formulas; and yet there is a serious complaint to make against this celebrity. Perform according to command (*vide* Photo Almanac); dab some paste on carte, and, with a piece of wool, rub briskly till you got a fine polish. There is no question but what it is a great improvement to the picture; but hand the same to a lady, "or anyone not in the profession," and after it has been the round of perhaps a dozen persons, just notice the state of things. Finger-marks innumerable. Just imagine a child with a piece of bread-and-butter in one hand and a photograph in the other, which, in the course of events, get rubbed together. Well, this is the state of things after a waxed carte has been criticised by a few of the generous public. The picture looks very nice when sent home from the studio, but I fancy many photographers would discard (especially for cartes) our beautiful wax process if they could but see some of their productions a day or two after going the round of admiring acquaintances.

To remedy this I have tried gums in abundance, paraffine for wax, and, as a last resource, bought a bottle as advertised; but all to no purpose. Just the same: wherever touched, leaves a greasy mark, and, as most persons naturally insert the carte in the album by taking hold of the middle of the carte, I leave you, dear sir, to imagine the consequence. And, to make matters worse, out comes the handkerchief to erase the marks, and off comes any touching-up that may be there, and then the universal cry, "We must try another photographer. Mr. So and So's photographs are always so smeary."

And now, dear sir, numbers of photographers, I am sure, would be ever indebted to any one who could overcome this evil, for evil it is.—Yours, &c., P. M.

Sydenham, October 23rd, 1870.

FIXING DRAWINGS IN LEAD PENCIL, CHARCOAL, AND CHALK.

Sir,—A much less expensive and troublesome method of fixing pencil and chalk drawings than the one described by W. Wolaneck, in last week's News, is as follows:—

Milk ... ... 3 parts
Water ... ... 1 part

Lay the drawings, face upwards, in a large dish or tea tray, pour the milk and water over each one singly, well cover them, pin them up to drain, and when dry they will be as secure as a print or engraving.

This plan I have used for many years, and nothing can be more effective. Buchanan Smith.

Blackheath Park.

DEVELOPING LIVERPOOL DRY PLATES.

Sir,—I am very sorry that unusual pressure of business has obliged me to delay answering your correspondent "W. G. C.," who asks how I "develop the Liverpool dry plates." I can only say, in reply, that I follow the instructions forwarded with the plates, and that I do not think that I have ever experienced the annoyance that, I believe, is called fogging. My impression is, that supposing the chemicals and solutions are in good order, a properly exposed plate will not fog. When the chemicals are right, the fog is most probably caused by the endeavour to bring out detail on an under-exposed plate, or to stop development on one slightly over-exposed, and most probably the former, as I do not think that a slight amount of over-exposure will have a material effect (of course, I take for granted that the plates are always carefully preserved from the effects of white light, as the Liverpool plates are most sensitive). I believe that such attempts are only successful in the hands of thoroughly practical photographers, and, as I make no claim to such a title, when I find that a plate is not sufficiently exposed, I bow to my fate, and place it amongst my failures. There is, however, one thing that may be a cause of failure, although I do not know that such failure would produce fog, as I have not experienced the trouble. I allude to the varying strength of the solutions of ammonia. I have always endeavoured to be particular in my photographic manipulating, both in making solutions and always using clean vessels and bottles, and I always use the solution of the carbonate of ammonia in preference to using ammonia itself, as I believe that the salt is more generally to be trusted. But even then, after making the solution, its strength will deteriorate, and I have heard from a friend that he was, on one journey, quite unsuccessful in obtaining good pictures until he had made a fresh solution of ammonia.

I am always very careful in obtaining a good definite idea of the working capabilities of my lens on the normal dry plates. I take a picture on wet collodion, and, immediately afterwards, I take, with the aid of a shifting back slide, four pictures upon two plates; that is, if the wet collodion requires thirty seconds, I give the first half of No. 1 dry plate forty-five seconds, the second half sixty seconds, the next seventy-five seconds, and the fourth ninety seconds; and this point once decided, it gives me, so to say, a starting point.

I hope that "W. G. C." will not think it too much trouble to commence most carefully from the beginning, and resolve upon sacrificing his first two, or even three, plates to experiments (of course he might make use of the smallest sized plates for this purpose), and I do believe that he will have reason to be pleased. The plates, in themselves, are so good that it is scarcely possible that he can have a failure from a chemical point of view, and it would afford me much pleasure to hear that he has been successful. Should such be the case, he would, perhaps, write me a line to my address, which I give; and should he still have cause to complain, I will, when photographic weather again comes round, and my time is less occupied, about May or June next, exchange plates with him, or adopt some means to see if I cannot make him as delighted with the process as I am myself. I am, sir, yours respectfully,

C. M. Major.

Cromwell House, Croydon, October 29th, 1870.

PRELIMINARY COATINGS FOR PLATES.

Dear Sir,—After a thorough trial of Mr. Jones's Tunicare I have had to give up using it. In my experience I have not found it in any way injurious to the bath, but after application of the Tunicare three-fourths of the prepared plates are useless, being dull and dirty looking, and full of tear-drop markings and streaks, and ridges, and the film seems rotten and foggy, which phenomena disappear when I use an ordinary cleaned plate.

I have tried to get better results by soaking them in the acid solution, as recommended, and well washing in as many as twelve changes of clean water. I have also tried soda alone, and followed by acid, with not the slightest difference in the results. The other week I prepared six dozen plates, and only eighteen were of any use, the others being in the condition above described. So, after some time spent in experiments, I reluctantly gave Tunicare up. Upon the appearance in the News of a formula published by a correspondent, I determined to try it, and succeeded beyond expectation, and amongst the first batch of plates tried, both I and my partner noticed the superior firmness of the film, which was all the more noticeable as we were using exactly the same chemicals as have been in use nearly all the time I have been experimenting with Tunicare. The formula is as follows:—Into a six-ounce bottle put spirits of wine, one ounce; glacial acid, three drops; water, two ounces; and, when mixed, add the white of an egg; well beat up; and, when added, violently agitate the bottle, and add three ounces more of water, and allow to stand all night, and in the morning filter the liquid from the curdled mass, and the filtrate is the Tunicare. To apply it, wash all trace of grease from the plates, and, whilst still wet, flood with the Tunicare twice, and stand up to drain and dry upon clean blotting-paper; when dry, the plate is quite ready for use, and will be found perfectly clean.

I should like some other photographers to try the above formula, and report.—I remain, yours truly, W. W.

28, Hanover Street, Rye Lane, Peckham, November 1st.

PHOTOGRAPHIC RECORD OF ARTILLERY EXPERIMENTS.

DEAR SIR,—In reference to the statement contained in a paragraph from the *Broad Arrow*, quoted in the last number of your journal, I beg leave to say that attached to the School of Gunnery at Shoeburyness there exists a photographic staff for the purpose of recording, by means of the camera, the results of all important experiments. The staff in question forms part, indeed, of the general establishment at Woolwich, the negatives taken at Shoeburyness being forwarded to the Woolwich Department to be printed and issued. The *Broad Arrow* is, therefore, in error in supposing that so useful an application of photography has been overlooked by the War Office authorities.—I am, dear sir, yours truly,

H. BADEN PRITCHARD.

General Photographic Establishment of the War Department, *Woolwich*, *November 1st*, 1870.

PERMANENCY OF DAGUERREOTYPES.

SIR,—I was much surprised to read in your impression of the 14th ult., page 486 (copied from *Licht*) that Daguerreotypes fade like paper prints. I have them by me twenty-five years, and now as good as the first day they were taken; and I have no doubt there are thousands in London of the same kind. If air has free access to them, of course silver will tarnish, owing to the sulphur compounds found in the atmosphere, which tarnish can be removed. The glass which covers them is impervious to air, and so is the back, which is metal; consequently there can be but little difficulty in securing edges so as to exclude the atmosphere completely. I believe them to be the most permanent pictures in existence, excepting none. How can it be otherwise? Silver is an elementary body, and therefore cannot decompose or alter by time. I used generally goldbeaters' skin to bind the edges, and I have found that sufficient for a quarter of a century to prevent the slightest trace of tarnish. Mr. T. Ross proposed cementing the glass on to the picture with Canada balsam. I have some secured that way since 1848, and of course they are as good as ever, and will remain so—as long as the balsam last, at least.

I cannot think why photographers left off so beautiful a process It could not have been because the public would not have them, for I have found many persons declare there were no likenesses equal to them, and have offered me three times the usual price to take one. My apparatus not being in order, and myself out of practice, I would not undertake the order. T. S. REEVES.

Exeter, *Oct. 26th*, 1870.

PIRACY AND COPYRIGHT.

SIR,—With reference to my letter respecting the recent copyright prosecution, published in your last issue, and your remarks thereon, I beg to make a few observations. I quite agree with you as regards the moral right. I do not in any way sympathise with pirates as such; I quarrel with the system by which owners of very questionable copyrights obtain convictions before conniving magistrates, and send men to prison who, whatever moral wrong they may have done, have not committed any *legal* offence. Copyright is a matter important to many of your subscribers, and perhaps to them a little discussion respecting the manner in which the present law is administered may be interesting and instructive. Mr. Justice Erle and others have contended that copyright existed at common law before the statute; but I can find no case in which it was ever established. On the contrary, there is a case in which it was denied by Lord Chief-Justice Abbot in De Berenger *v.* Wheble. The preamble of the Act says:—"Whereas, by law, as now established, authors of paintings, &c., &c., have no copyright." It is clear that at the present time copyright exists only by the statute. That the statutes are strictly construed there is every evidence to prove; a very slight technical error is sufficient to vitiate copyright. Davidson *v.* Bohn.—Plaintiff was non-suited because his purchase-deed was attested by only one witness when the Act required two; Graves *v.* Ashford (engraving), prints diversely dated; Wood *v.* Boosey (music); Low *v.* Routtedge (literary), address of assignee of copyright not stated upon the register, and date of publication not fixed.—Plaintiffs non-suited. When authors of works neglect to comply with the provisions of the statute, they acquire no copyright, and the right to copy becomes common. The statute, in the second section, says:—"Nothing herein contained shall prejudice the right of any person to use or copy any work in which there shall be no copyright." The statute being penal is also a reason why it should be strictly construed.

You make no remark respecting registration. I shall be glad of an opinion on that point. I contend that the author must register, and that every assignment must be registered. This was not done in any of the five subjects included in this case. We differ respecting the word "original" because we do not use it in the same sense. The House of Commons passed the Bill giving copyright to *all* paintings, drawings, and photographs. The Solicitor-General, in his speech March 20th, 1862, said:—"Thus copyright was given to copies so far that copies might not be copied without consent." In the House of Lords, May 22nd, 1862, Lord Overstone said:—"This was obviously an artist's Bill, drawn up for the protection of artists only, without any reference to the interests of any parties in connection with these subjects, such as the interests of general purchasers of pictures, the interests of publishers of illustrated works, and the interests of the public at large. He had always understood that the fundamental principles upon which special privileges or patent rights were granted were, first, that the work should be, in the true sense of the word, an invention—something new and creative on the part of the person asking these privileges; and, secondly, that, in consideration for granting exclusive protection for a given period, the novelty should be especially and distinctly described, so that at the end of the period of protection there should be a special dedication of the subject to the public interest. He did not see in this Bill the slightest reference to either of these principles, and the very expression 'new and original,' which had been used on all former occasions, had in the present instance been carefully excluded." Again, in the House of Lords, May 23rd, 1862, the same noble lord said:—"In the first place, he thought it was reasonable and proper that the words 'new and original' should be introduced before the word picture in the first clause." In consequence of this opposition, on the 18th June, 1862, in a select committee of the Lords, upon the motion of Lord Chelmsford, the word "original" was ordered to be inserted before the word painting in the first clause. Now, what is an original work of art within the meaning of the statute? Clearly, not any work of art that is a reproduction of another work of art. Three years since I held much the same opinion upon this point as you do now; but having occasion to see a certain West End solicitor, at one time well known for levying black mail upon shopkeepers for alleged piracies, in the course of conversation I remarked that I considered a photograph of a painting to be entitled to copyright, because it was not of the same nature as the work copied. "Not so," said his chief clerk; "there is no copyright there. A photograph from a painting is only a copy, and therefore not entitled to copyright under this Act, which relates only to original works of art, and not to copies." After some discussion I acknowledged his conclusion was sound; but as, like Mr. Sweedlepipes, I had to draw the line somewhere, I drew it at photographs of works of art in the solid, viz., statues. But from this position I was driven by another lawyer, who maintained that no photograph taken from *any* work of fine art could have any claim to be considered an original work of art. A photograph from a painting may be said to be an original photograph in the sense that it is not a copy of another photograph; but I do not think that it can be proved to be an original work of art within the meaning of the statute. If such were the case there would be this anomaly. A painting from a painting is a copy; an artist might be employed for many months in making it. He has no copyright. Yet a photographer, who could produce a copy in half an hour, would have copyright. This would not be exactly just towards the painter. As I understand the Act, no copyright can be maintained in any *copy* of a work of art. I will not trespass upon your space any further at present, but will resume the subject next week.—I am, sir, your obedient servant, J. CUNNINGTON.

London, *November 1st*, 1870.

NEGATIVES FROM NEGATIVES.

SIR,—The testimony of such careful manipulators as Mr. Blair and Professor Towler in favour of my assertion that it is quite possible to reproduce negatives equal to the originals will be admitted to carry much weight; but as practical demonstration is most conclusive, I have, in accordance with my promise, prepared examples for the Conduit Street exhibition, if the hanging committee shall think them worthy of a place.

I had some difficulty in deciding upon the subjects, but ultimately selected two well known published celebrities, the negatives being kindly lent me for the purpose by Mr. R. W. Thrupp. These I have reproduced in three different sizes.

I am not satisfied (this is not said by way of apology) that the reproductions are the best that can be done, but I think they will go far to support my position.

I intend being in town next week, and shall be glad to submit to your inspection a few other examples, and give you all particulars as to the method; but, I promise you, I have *no secrets*; and if I shall have stirred the attention of photographers to what I think is a valuable, though not much used, power, the only end I had in view will be gained. J. Pickering.

The Cottage, Sparkbrook, Birmingham, Nov. 1st, 1870.

OPERATORS' SPECIMENS.

Sir,—In answer to the article called forth by an "Unemployed Printer," in reference to "Operators' Specimens," I ask your kind permission to make the following remarks:—

If it be so natural, and almost universal, for employers to refuse assistants specimens, why do they request them to be sent when about engaging assistants? Such a demand seems tantamount to setting a trap, and prompting an assistant to commit an act of dishonesty. Two or three specimens are no criterion as to a man's general abilities: the most ordinary operators sometimes produce passable work, and it is quite natural and universal for them to send the best; hence many employers are thus deceived.

If employers get satisfactory references as to an assistant's moral character and fitness, they ought not then to have recourse to the almost useless practice of asking for specimens, which, in many cases (especially if a non-engagement), are never returned, though you write four letters with a stamped directed envelope.

A fair remedy for the grievance (if specimens are really indispensable) would be for the employers to allow assistants such specimens as would honestly represent their capacity, or entirely discard the system; then the assistants would run no risk either of an ignominious dismissal, loss of character and liberty, or a criminal prosecution.—I am, sir, respectfully yours,

An Employed Printer.

Talk in the Studio.

Photographs of London.—Perhaps there is no possible application of photography which can possess a more comprehensive interest than that found in the series now before us. It is not a little remarkable that a metropolis like London, abounding with scenes of historic association and varied present interest, abounding with architectural and engineering triumphs, the largest, busiest city in the world, with the most picturesque environs in every direction, should have received but comparatively little attention from photographers. Many single pictures or fragmentary series have been produced, and some of them very excellent; but a complete and comprehensive series has been a decided desideratum. In the collection before us, Mr. Frederick Yorke, whose name as a first-class photographer is well known, has undertaken to produce something like completeness, and succeeded well. Here are between two and three hundred views, extending in every direction, from the Tower of London to the Castle at Windsor. Each picture in the series is produced in four styles, 11 by 9 inches, cabinets, stereoscopics, and magic lantern transparencies. We have not time or space now to review individual pictures, but may state that all we have examined are excellent, and we may add that we shall probably find occasion to refer to the subject again, for the purpose of more detailed remark.

Portraiture and Civilization.—Sir John Lubbock, in his recent lecture in connection with the British Association at Liverpool, incidentally suggested a new test or touchstone of civilization. It has been held, somewhat whimsically, but with much truth, that the amount of soap used in any country might be regarded as a fair guage of the civilization of the people. The new test, which we derive from a remark in the worthy baronet's lecture, is the extent of the taste for portraits prevailing in a nation. The lecturer remarked that "savages had a dread of portraits. The better the likeness, the worse, they think, for the sitter; for so much life could not be put into the copy except at the expense of the original." If a dread of portraits be one of the indices of a savage state, conversely it may be fairly assumed that a love of portraits may be regarded as an index of civilization.

Sham Photographic Horrors.—It is to be regretted that the irrepressible photographer, in his anxiety to purvey records of the horrors of war, should cast imputations on the veraciousness of his art by serving up sham horrors in imitation of the ghastly reality. A correspondent of a contemporary says:—"I have told you enough of the horrors of war; let me now put you on your guard against its spurious terrors. I have supped full of horrors, and my nervous sensibilities are now dulled. Yet, I confess, it was not without a twinge of pain that I saw a wretched group of wounded men lying on stretchers, with head and limbs bound up, while their bearers were posed that a war photograph might be taken. It was no little relief to me, and I am sure it will be to your readers, to find that this was a mere photographic farce, and that the instant the tedious operation was over the wounded jumped from their stretchers, threw off their mock bandages, and went about their usual duties sound in wind and limb. The whole thing was a mere sham, and many such shams are got up daily by enterprising photographers."

Photography and Carrier Pigeons.—In a recent article in the *Daily Telegraph*, the writer, after alluding to the Balloon Postal Service in Paris, says:—"Here, for instance, among the latest Paris novelties, we find a plan to convey letters by pigeon. The missives are not to be of the ordinary size, for in that case no bird could carry more than one or two. The idea is, to call in the aid of photography, which would print a letter in an infinitesimally small space, to be enlarged afterwards, by the aid of the microscope, for the benefit of the receiver. Thus 30,000 answers, each printed about the size of a pin point, might be sent by one pigeon." We learn from M. Adam-Salomon that this plan has been for some weeks in operation.

Collodion for Sea Sickness.—Dr. O. Rapin, of Grandson, in Switzerland, says that he has found that the nausea and vomiting produced by swinging and sea sickness can be arrested by applying to the epigastrium a layer of wadding dipped in collodion. It should extend from the xiphoid cartilage to the umbilicus, and be left until it falls off. If the adhesion be imperfect, the application should be renewed. Several persons, he says, have tried this plan with benefit. The explanation which he gives of it is, that the action of the peripheral nerves is interrupted, just in the same way as the pain of calculi in the bile-passages or ureters is sometimes mitigated by the application of castor oil and collodion.—*British Medical Journal.*

The Eclipse of December 22nd.—Incredible as it may seem, the Admiralty have refused the use of a ship to convey the astronomers and others who had volunteered to observe the eclipse. It will be felt by all that the chief misfortune here is not the loss of the opportunity of making observations likely to throw light on the subject of solar physics. Important as the results of well-concerted observations would in all probability have been, we could better have sacrificed the results of the observation of total eclipses than have suffered the shame of such paltry parsimony to rest for ever as a blot on the scientific repute of England. To all ages the story will be handed down that in 1870 England seemed to have forgotten the traditions of past munificence in the cause of science, and that when sixty generous men volunteered their services at no unimportant sacrifice, England could not find a corner for them in all her navy. Where George III. could be generous, insomuch that under his auspices ships were sent to the Antipodes to observe a transit of Venus, a Liberal government in this 19th century can risk the reputation of the country through a miserly economy. But then there is war, and who can say what risks this country might not run if any one of her ships should be employed to leave observing parties at Gibraltar or Syracuse, and to transport them back again to England? The prospect is terrible indeed. Yet, unless we err, this country has done more than that in the cause of science when Europe was in arms from the North Cape to Gibraltar and Matapan.

France, also, when in the throes of a terrible revolution, and threatened by armies on all sides, could employ Delambre and Méchain to measure an arc of the meridian, under circumstances of such difficulty and danger that the completion of the task is among the wonders of science. Truly our boasted progress is of questionable value if the spirit which has rendered it possible is to be thus forgotten.—*The Popular Science Review.*

The Chemistry of Nature.—A leaf is a laboratory in which the active agent is the sun's rays. A certain species of the solar ray enters this laboratory, and immediately commences to decompose carbonic acid into its constituent oxygen and carbon, allowing the oxygen to escape into the air, while the carbon is, in some shape, worked up and assimilated. First of all, then, in this wondrous laboratory of nature, we have a quantity of carbonic acid drawn in from the air: this is the raw material. Next we have the source of energy, the active agent: this is light. Thirdly, we have the useful product; that is, the assimilated carbon. Fourthly, we have the product dismissed into the air, and that is oxygen.—*Balfour Stewart.*

To Correspondents.

Inquirer.—Mr. Pickering will exhibit examples of reproduced negatives at the forthcoming exhibition, and has promised to supply us with details of the mode of producing them.

W. W.—The amount of nitrate of silver necessary to precipitate the impurities in river-water must depend upon the quantity and nature of such impurities. In the New River water the proportion is about sixteen grains per gallon. If this were all equivalent in its combining power to chloride of sodium, it would require nearly fifty grains of nitrate of silver to precipitate the chloride. As a rule, you may add about a grain of nitrate of silver to an ounce of the river-water of which you wish to make a bath, and then sun and filter. 2. The very faint pink tint left after purifying with permanganate will not be injurious. 3. A precipitate of citrate of silver will be formed if the silver solution be alkaline or neutral, but not if there be the trace of nitric acid usually present in crystallized nitrate of silver.

Practice.—The fullest and most recent details of Mr. Burgess's Eburneum process will be found in the Photographic News for Sept. 4, 1868.

T. H. N.—The discolouration of the prints you enclose is due to imperfect fixation. The hyposulphite solution has been too weak, or old; or the prints have been imperfectly immersed. In proportion as paper is highly albuminized, it requires more care to secure perfect fixation, and a stronger solution is necessary than with thin, soft, or lightly albuminized paper. Sometimes the accession of cold weather will cause a solution to fix imperfectly, which in hot weather answered satisfactorily.

C. L. M.—We do not know of any sizing preparation for applying to photographs previous to colouring better than Newman's. You may try isinglass dissolved in gin by the aid of heat; or you may try parchment size to which a little alum has been added.

C. B. Riversdale.—The print forwarded has the appearance of having been coloured with aniline colours. You can obtain them, we believe, of Mr. Solomon. It is varnished after colouring with some aqueous varnish—such as albumen, gelatine, or gum arabic. 2. Liver of sulphur is the commercial name of polysulphide of potassium. All waste silver solutions and residues thrown into the old hypo solution may be reduced by it into the form of sulphide of silver. 3. We generally prepare our own collodio-chloride, and use it within two or three months of preparation; but we have kept some without deterioration for nearly twelve months. The sample used in producing the negatives of which we spoke had been mixed six months. The process is not difficult. 5. Thanks in advance for promised description. The print has been posted.

W. W. (2).—Your letter appears on another page. Thanks; we shall have pleasure in receiving the paper you propose. The subjects named are very interesting.

J. S. (Bennett's Hill).—Unquestionably there is a theoretical, and generally a practical, advantage in having a glass roof placed at an angle of 45°, as securing the incidence of the greatest number of rays at right angles, or nearly. The same angle is also a good one for practical purposes. If any advantage of convenience is gained in slightly modifying the angle, the theoretical difference in the light entering is too trifling to be appreciated. We do not think that the possible advantage gained would be commensurate with the inconvenience of a sloping side.

An Old Member.—The dress question is, you have seen, already settled.

M. M.—We fear that you have not obtained a pure sample of white wax, but one adulterated by the addition of grease. White wax, when pure, should be hard, and quite free from greasiness. The addition of gum elemi, which should not be greasy, is to confer toughness and transparency, as the wax alone would be somewhat brittle, and also not quite transparent. The cement in the example you sent was undoubtedly composed chiefly of wax. That substance or paraffine has the peculiarity you require, of being quite plastic when warm, and setting rapidly when cold. Mr. Briggs's experiments in cementing a print to glass, and final success with wax, are most important for your information. We cannot, however, reprint the article. Possibly, by searching, you may find your mislaid Year-Book of 1869. Many recipes for such varnishes or cements have been published, similar processes having been patented over and over again. Here is a recipe, but less effective, we think, than those we have already given you:—

Mastic	1 drachm
Venice turpentine	3 drachms
Benzole	7 ,,

This is a French formula.

C. C. Cox.—Paraffine oil gives, we think, a more brilliant light than sperm oil; but, on the whole, the latter, with the addition of a little camphor, is preferable. 2. The admission to the exhibition is by ticket, to be obtained of a member.

W. H. W.—Much depends on the kind of touching required on the old negative. If merely to touch out pinholes, almost any colour will serve. On the whole, Payne's grey is perhaps the most useful tint. You can obtain it of Newman's, Soho Square, or any artist's colourman.

Delta.—The causes of want of density in negatives are very various; but, assuming that everything is in good condition, one of the best remedies is the use of collodion with a little more body. The addition of a little gelatine to the developer is often an aid to density. The fact that some of your negatives are sufficiently dense, and others not so, points to the probability of some error in manipulation. A common fault is to sweep off the free nitrate of silver in pouring the developer on to the plate; this is a fatal cause of insufficient density. Want of sufficient light in the subject is also a frequent cause. The use of new collodion is a frequent cause. A weak bath is sometimes a cause.

Anglicanus.—There is no specific proportion of pyro to iron in using the mixed developer. Col. Wortley, who has given the subject the most attention of any one we know, states that he mixes in such proportion as he finds by experience the subject requires, bearing in mind that iron represents detail and pyro intensity. 2. The pyro may be kept in concentrated alcohol solution of known strength, or made up from day to day as required. 3. Blotting-paper pads may be used for fuming, but felt is better. 4. We have no personal knowledge of the gentleman, but believe he is trustworthy.

W. H. J.—The collodion employed appears to have been somewhat too thin, and of a character giving too powdery and dead a film. The spots appear to be the result of some turbidity, caused by undissolved particles in the collodio-chloride. Did you take care that the platinum bath was, after neutralizing, made slightly acid with nitric acid? The toning bath with chalk will keep pretty well without any treatment if it is not much exposed to light. Try adding a little of Liesegang's papyroxyle to your collodio-chloride.

J. Cunnington.—The subject is of interest, and we shall endeavour to find space for its fair discussion. The law is neither so clear nor so satisfactory as is desirable now, but many of the provisions of the last withdrawn bill did not tend to mend matters.

T. Girault.—We have had no personal experience of the lens you name, but from what we learn we should give the preference to that of the English maker. The No. 3 will, we believe, cover a 10 by 8 plate very well. 2. In using the washed and fumed paper process, the bath may be neutral, or slightly alkaline. Some experimentalists have found that an acid bath was a cause of failure. 3. The vignetting may be effected by placing a mask with an oval aperture between the negative and sensitive plate, and keeping it in motion. By examining the effect on the focussing-screen you will find the proper place for this mask.

E. Ogier.—The volumes received; many thanks. We shall look with interest for the further examples of your work, and the communication thereon.

Several Correspondents in our next.

Photographs Registered.

Mr. J. **Stuart**, Glasgow,
Three Photographs of Lord Lorne.
Mr. A. **Clarke**, Stourbridge,
Photograph of Bishop of Worcester.
M. J. E. **Cobb**, Christchurch,
Three Photographs of Highcliffe Castle.
Photograph of Lord Chelmsford and Family.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
The Exhibition of Photographs, and Conversazione 529
Registration and Copyright 530
Photographic Field Equipments for the Army 531
Woodbury's Photo-Mechanical Process. By W. T. Bovey 531
American Photography. By Dr. H. Vogel 533
The Action of Light, Developer, and Hyposulphite in Producing a Negative. By Eibert Anderson 534
Simple Way of Making a Still. By J. Edwards Smith 536
PAGE
Photography and War. By Dr. Vogel 536
Dry-Plate Processes. By Hermann Krone 537
On Heliotypy as a Means of Reproducing Works of Art 538
Correspondence.—The Forthcoming Eclipse—Tunicare—Encaustic Paste which does not Smear 539
Talk in the Studio 539
To Correspondents 540
Photographs Registered 540

THE EXHIBITION OF PHOTOGRAPHS, AND CONVERSAZIONE.

The Exhibition of the Photographic Society, which, in its resuscitated form, we are glad now to regard as an annual institution, was opened on Tuesday evening last by one of those social reunions of the members and their friends which are generally much more pleasant than the conversazione of the formal type. The attendance was large, the arrangements excellent, and general satisfaction prevailed.

The exhibition is unquestionably the finest in every respect which we have yet seen. The number of contributions is greater, there are more especially noteworthy pictures, and the general standard of quality is higher, both as regards technical excellence and artistic feeling. We miss with regret the work of some well-known and old contributors, and there are fewer examples of novelties or indirect applications of photography than might have been anticipated. It is in the legitimate and familiar applications of photography to portraiture and landscape that the exhibition is strongest, and it is scarcely possible to conceive anything more perfect than many of the examples here hung. By comparison with the excellence of much of the plain portraiture, the mass of the coloured work is poor in the extreme, suggesting how much more valuable the result is when art is put *in* the picture rather than *on* it. Perhaps the number of subject pictures, or photographic art studies, is smaller than on some previous years, but there are many more specimens of landscape and portraiture, which, apart from resemblance, possessed completeness of interest as examples of pictorial effect. The limits of space and time do not permit any extended or detailed criticism of the pictures this week; we shall briefly glance at some of the more prominent features of attraction now, reserving fuller comment for our next.

Perhaps the most attractive picture in the exhibition, and in many respects deservedly so, was a view in North Wales, by Mr. Earl, of Worcester, the subject being the Lledr Valley. Mr. Earl's name has always been associated with large pictures and good work, but he has never before combined so many good qualities. The unusual size of the photograph, thirty-one inches by twenty-one, is the first thing which attracts attention; but, after a short examination, the size becomes a very secondary matter, the art qualities of the picture claiming primary interest. Despite the somewhat monotonous effect of a vast rugged foreground of large rough boulders, which scarcely possess elements of light and shade enough to relieve them well from the middle distance, the picture is exceedingly fine as an artistic composition. The huge grandeur of Moel Siabod, looming up in the distance half enveloped in mist, is a rendering of the scene, one with which all Welsh tourists are familiar, which in truth to nature and art qualities might well compete with the best productions of the pencil. The fine balance of the composition, the excellence, with slight exception, of the chiaroscuro, and the perfect rendering of space and atmosphere, combine to produce one of the finest landscape photographs ever exhibited. It is produced, we believe, from several negatives. Mr. Earl has some other fine landscapes of less size to which we shall hereafter refer.

Setting aside the element of unusually large size, which attracts from its rarity and known difficulties, but which is scarcely an element of much value from an art point of view, by far the finest landscapes are exhibited by Messrs. Robinson and Cherrill. These are all sixteen inches by twelve, and, for the most part, consist of marine views. The chief characteristic which strikes us is the unusally luminous quality, the perfect sense of daylight. Although manifestly, in many cases, instantaneous pictures, as shown by the perfect rendering of breaking waves, rushing surf, and rolling clouds, there is no trace whatever of blackness, heaviness, or under-exposure; every shadow is transparent, and full of reflected lights. While this sense of light and air pervades the pictures, there is no weakness nor tameness; they are brilliant and forcible, as well as delicate and luminous. Without entering into detailed criticism at present, we may especially mention, as examples of the qualities to which we have referred, "Dayhreak," No. 64, and "The Turn of the Tide," No. 66. A fine collection of the same class of pictures, but larger in size, and aiming at more startling effects, is exhibited by Col. Stuart Wortley, moonlight scenes prevailing. The cloud effects are very wondrous, and some of them very grand, with a weird, wild grandeur. They are larger, bolder, and more striking than the moonlight pictures existed last year by Col. Wortley, but we are not sure that personally we do not prefer the latter, in which a mystic tenderness and poetry prevailed, which pleased us better than the startling, almost exaggerated, boldness of conception and execution of these. We shall return to the subject, however, in detail later.

Turning from the massive and large to the small and exceedingly delicate, we come to the half dozen landscapes exhibited by Mr. R. Manners Gordon. Each of these six pictures is produced by a different process, and no argument could so admirably demonstrate the position we have so often maintained, that in photography excellence much more depends on the man than on the process. The wet process, the gum-gallic process, the resin process, the Fothergill process with the Hannaford-Bartholomew modification, Mr. Gordon's method with the albumen followed by a wash of acetate of morphia, and the collodio-albumen or Taupenot process, are all represented, and, notwithstanding the great uniformity of excellence, the result of the oldest process is undoubtedly the best.

There are many more excellent landscapes to which we cannot refer now, but we may especially mention the works of

F. and W. Bedford, Stephen Thompson, Vernon Heath, T. M. Brownrigg, W. D. Sanderson, Captain Lyons, and Mr. Brookes, amongst many others, as especially worthy of attention.

There is much exceedingly fine portraiture in the exhibition, more really charming pictures, as well as likenesses, than we have seen in any former exhibition. Mr. Blanchard this year, as last, bears off the palm, and fine as his work was last year, in the present contributions we find improvements. Without any sacrifice of the boldness, depth, and richness which characterized last year's work, there is here still greater refinement and delicacy. The portraits of Mr. Ashby Sterry and Mr. Tom Hood are most admirable examples of characterization; that of Miss Julia Elton, and one of a lady, are photographs which any one might prize as pictures without any feeling of interest in them simply as likenesses. The same quality distinguishes the portrait exhibited by Messrs. Robinson and Cherrill of "Pollie," a very charmingly pretty girl sitting reading, in "maiden meditation fancy free." Mr. Slingsby, of Lincoln, exhibits some exceedingly fine portraiture of very large size, taken direct in the camera on plates twenty-four by eighteen. The size is by no means the distinguishing merit, however. They are perfect in modelling, light and shade, harmony, and expression. Messrs. Downey exhibited some charming cabinets and cards, in which recent royal portraits excited much interest. Some exceedingly fine portraiture is exhibited by Mr. Marshall Wane, which is well worthy of examination. Robinson and Thompson, of Liverpool, B. J. Edwards, Netterville Briggs, Dr. Wallich, A. Lafosse, H. Ashdown, and many others, exhibit portraiture of great merit.

Belonging to portraiture, but special in process, we may here mention the photo-crayons exhibited by R. H. Preston as unusually fine examples of this style, as are also the photo-crayons of Vandyke and Brown. The enlargements on opal by Bullock Brothers are fine. Mr. Window's untouched enlargements in carbon are unusually fine examples of large prints from small negatives, to which we shall refer again. Mr. Cocking's photo-tints are charming examples of the legitimate use in art in adding charms to photography. Mr. Piercy has some fine examples of his method of giving art value to photographic portraiture.

The examples of reproduced negatives contributed by Mr. Pickering, in accordance with his recent promise in our pages, were not, unfortunately, all hung on the opening night. Those we have seen—some of which will be found numbered 323 and 332—are certainly amongst the very best examples of this kind of work we have seen. The process is that ordinarily pursued: the production of a transparency by the wet process in the camera, and from that a negative in like manner, excellence depending on care and nicety of conditions. We shall refer again to the subject, and Mr. Pickering has promised a detailed statement of operations.

Striking among the artistic studies or compositions are the wonderful heads of Col. Stuart Wortley, which will command much interest. These are studies of heads, in costume, taken direct in the camera, on plates twenty-four inches by eighteen, in a masterly style, possessing singular force, relief, and character. For admirable arrangement, perfect modelling, excellence of composition, character, and expression, "The Sybil" (No. 101) will be, we think, a general favourite; whilst No. 106, "My Queen," will charm by its sweetness, delicacy, and tenderness, very remarkable in a photograph of such proportions, in which there is no lack of brilliancy or force. There is in all, indeed, a rare solidity, due both to technical photographic excellence and skilful art treatment. It may become a question whether a size so nearly that of life is desirable in photographic art studies; but, admitting the desirability, these far surpass any of the kind which has been attempted. They suggest, of course—both in size, draping, and titles—some of Mrs. Cameron's pictures, but they have none of the slovenliness, and smudginess, and lack of definition which, unfortunately, have too often characterized the published studies of this lady. The only large composition we have noticed is Messrs. Robinson and Cherrill's "Trysting Tree," a noble picture, to which we shall refer on another occasion. Mr. Rejlander has some charming studies, to which we shall refer again. Mr. Hubbard has one study which is fine, but not an advance on last year. Mr. Adam Diston is a new contributor, whose work we have watched for years. He is a worthy competitor in the art field. Mr. Warwick Brookes contributes some fine studies of heads. Mrs. Cameron contributes largely, and many of the pictures possess much art suggestion. Mr. Faulkner's baby studies are charming.

Amongst specialities, Mr. Hughes's enlargement on transferred collodion of Mr. Rejlander's group, the "Solar Club," will excite interest, from the excellence of the grouping and the portraits, and also from the interest attaching to such an admirable example of an important method of enlarging. Messrs. Sarony and Co.'s fine carbon print of the committee of the Manchester Cotton Famine Fund is a grand picture, at which we have as yet only had a glance. A series of portraits of the actors in Passion-Play, at Ober-Ammergau, exhibited by Captain Bedford Pim, is very interesting. Mr. Woodbury's examples and Mr. Edwards's specimens of their respective methods of photo-mechanical printing are capital. Enamels were exhibited by Mr. Henderson, by Mr. Solomon, and Lafon de Camarsac. The examples of coloured work were numerous, but not generally excellent, the finest which came under our attention having been some miniatures by Mr. Croughton. To apparatus, and other matters of interest, we must refer in a future number.

REGISTRATION AND COPYRIGHT.

In our last, Mr. Cunnington replied to some of our recent observations on the subject of fine art copyright and piracy. On the moral aspect of the question it appears that we are agreed; it is on the legal bearing of the case—or, rather, on the exact meaning of the somewhat loosely constructed statute—that our correspondent is at issue with recent decisions, and, to some extent, with ourselves. As he proposes to state the results of his close observation of the various cases which have been heard during the last few years, we will not discuss the points that may arise at present. There is one point, however, of considerable importance to photographers, upon which Mr. Cunnington asks our opinion, namely, the effect of non-registration upon copyright. Taking the statute as the guide, the terms are very specific. After describing the book of registry in which a memorandum of each copyright and each assignment of copyright shall be entered, the section ends in these words: "And no proprietor of any such copyright shall be entitled to the benefit of this Act until such registration, and no action shall be sustainable nor any penalty be recoverable in respect of anything done before registration."

Nothing, apparently, can be more precise and specific. Legal commentators find, indeed, room for doubt as to the propriety or meaning of the clause. Mr. Underdown, in his work on copyright, referring to the matter, says, "It has been much debated whether the artist should be compelled to register his painting or other work before he can call in the aid of the law to secure to himself the rights and profits of copyright. And I incline to the opinion—held, I believe, by a great number of artists—that if such a legal right exists, it should be secured without the adoption of formalities which are in reality no evidence of originality, and which themselves may give rise to the disputes which they are intended to prevent." This view is enforced by the fact that "a large class of unprincipled copyists and imitators will be on the watch to take advantage of every informality." Where the justice of the condition is doubtful, the decision of a court of equity cannot always be relied on for maintaining it, and, if we remember aright, in the case of Strahan *v.* Graham, heard before Vice-Chancellor Malins, and subsequently before the Lord Chancellor, Mr. Graham's copyright was maintained in photographs of which no registration had been made previous to sale, the photographs having been taken, so far as our memory serves, at an earlier date than the passing of the Act.

Whilst we mention these circumstances to show that a possibility of doubt exists as to the absolute necessity of registration before publication or sale, we have no doubt in our own mind as to its importance, and that a strict compliance with the terms of the Act is an imperative condition in securing copyright. And further, that the proof of the regularity of such registration, both as to copyright first claimed, and transfers, should be not less imperative in substantiating any charge of piracy.

PHOTOGRAPHIC FIELD EQUIPMENTS FOR THE ARMY.

We may as well again remind our readers of the fact that with the army of the Crown Prince, from the first, has travelled a photographic department; and that it has been found extremely useful we may judge of by the fact that more photographers have been drafted to the different armies from Berlin. Scarce plans of the country have been multiplied as occasion demanded; reconnaissance sketches been copied, and joined one with another; and views of an interesting character have been taken by this photographic staff. Doubtless, on the termination of the war, we shall have many interesting details to communicate regarding the working and arrangements of this branch of the army organization. We have good reason to believe that, like the rest of the equipments placed in the field, that devoted to photography has been organized with almost absolute perfection.

War, alas! being now a science, it is necessary that every aid to a successful issue out of it should be fostered. Certainly, none can put in a better claim to be a scientific aid than photography itself; and, being so convinced of this ourselves, we have experienced at different times an anxiety to know how far England was availing herself, for military purposes, of this handmaiden. Three weeks since we called attention to the fact that apparently the military authorities had taken no steps to organize an equipment for the field.

Since writing, we have made further inquiries on the subject; we find, as we then stated, that the photographic staff will be filled by the Royal Engineers, and that they, amongst their other varied duties in the campaign, will be called upon to perform those of photographers to the army. We think no better arrangement could be made. With the instruction afforded them at Chatham by the Officer-Instructor and by the Sergeant-Instructor, there is no reason why they should not be *facile princeps* in the particular branches of the art they are called upon to undertake. We learn that at the present time the R. E. Committee (who decide all the questions regarding engineer equipments and patterns) have had submitted to them, by the present instructor in photography, estimates and drawings for a photographic equipment. We understand that the estimate is divided into two headings, "field" and reserve; the one being an estimate for kit for the front, and the other as a reserve for location at the base of operations. A waggon, similar to that used for the Field Telegraph Office, is to be, if we are rightly informed, the conveyance for the whole of kit in the "field" estimate, and is also adapted to serve as a dark-room. A separate kit is, we understand, provided for mule or horse carriage, and one also for porterage by one or two men. Liverpool dry plates figure in the list, the experience at the Military School of Photography at Chatham, of their keeping qualities, being in accord with that of several eminent photographers. Economy of height and space consistent with efficiency seems to have guided the estimate for the equipment. We trust that *false* economy will not be permitted to rule further, for we have heard—and, we think, not erroneously—that specifications and drawings will be considered a sufficient embodiment of the estimate. We protest against such preparation of an equipment. Government should remember Abyssinia. We give them timely caution, and trust that they may profit by it (if Government officials ever *do* profit by other than that they buy dearly for themselves). We assure them that, to be complete, an equipment must be prepared at leisure, or it will be certain to be defective.

WOODBURY'S PHOTO-MECHANICAL PROCESS.

BY W. T. BOVEY.

In these days of feverish excitement and bloodshed it is refreshing to turn aside from the war-path—where huge heaps of murdered manhood, and the wide-spread desolation wrought by contending armies, will surely block the way of progress for many a day—to watch, in our highly favoured land, the development of humanizing arts, which grow and flourish in the sunshine of peace and security. So thought I as I folded up my *Daily Telegraph*, preparatory to starting on a photographic visit of inspection to Hereford Lodge, situate at Brompton, and where the Woodbury mechanical printing process is now in full and prosperous working, under the auspices of a limited company of *bona fide* shareholders, and the intelligent and energetic management of Mr. Preston, to whose kindness and courtesy I am indebted for the pleasure experienced whilst I watched the working, from end to end, of the process. I have received full permission to describe it in its every detail.

My readers are doubtless aware that Mr. Woodbury's ingenious invention has long been tossing about on the adverse sea of misfortune; but as trials subdue and improve humanity, so has misfortune brought nearer to perfection the means by which the most exquisite prints are now readily produced from the metallic moulds, so truthfully and wondrously engraved. And if that unlucky, yet long suffering-creature, the original shareholder, could but succeed in applying a philosophic balm to his wounds of disappointment, he might find a solace for his losses in the reflection that the greatest achievements which confer grandeur on modern times have arrived at the goal of perfection through the heroic, if not disinterested, sacrifices suffered by an enterprizing band of original shareholders, whose money has brought advantages to the inventions, and profit to a laggard rank of speculators, who prudently await the eleventh hour of bargaining for a cheap success.

If it be true that luck is connected with odd numbers, Mr. Woodbury's process has now a fair chance of succeeding, this being, I believe, the third start it has made on the road of commerce. If good results go for anything, it must command a genuine success; and it is satisfactory to observe that perfection and simplicity are brought hand in hand together in the appliances by which the pictures are produced, as I now proceed to show, by describing the working of the process from its beginning to the end that terminates a line of ingenious devices which merit and command success.

In common with photographic processes generally, the Woodbury invention is inseparably allied with chemistry. A well-appointed laboratory is, therefore, attached to the works, which need no other descriptive remark than the statement that it contains a liberal supply of chemical solids and fluids such as are needed for working the process.

The first department to which the visitor is introduced is that portion of the building in which the gelatine tissue is prepared as follows. A square of glass is adjusted to an accurate level, and a warm mixture of gelatine and a bichromate is poured thereon in quantity sufficient to form a film that will bear subsequent handling. Whilst the gelatine is "setting," ample employment to curiosity is given by a grooved box or cupboard, which, in its construction, is not unlike a seed-drying apparatus in miniature. When the gelatine film is well "set," the plate is removed to the cupboard now under examination, where it is held in a horizontal position by the grooves into which the glass fits and easily slides. A tray placed at the bottom of the box contains chloride of calcium, which at once explains the principle on which the drying business is based. When thoroughly dried, the gelatine is stripped from the glass, and is then ready for printing operations, which, in every particular, is conducted in the old-fashioned silver printing way. The time of exposure, however, is regulated by a tell-tale actinometer that is constructed on a similar principle to the instrument I described in a recent paper on Mr. Edwards's carbon process. When fully exposed, the tissue is removed from the frame, and again attached to a square of plate glass, the exposed surface of the film next the glass. The development of the image by an application of hot water is then proceeded with, the method of developing being similar to that used in "autotype printing," the warm water acting upon and removing portions of the gelatine in degrees of thicknesses which harmonize with the varying amount of light that the negative's gradations of transparency have admitted on the film whilst exposed to solar influence.

Although Mr. Preston prefers exposing his tissue to diffused solar light, he has at command means which make him independent of Sol's wild caprices. Of course, everybody has heard tell of Wild's wonderful light-producing machine. Well, thanks to "original shareholder's" liberality and pluck, Wild's famous light-grinding apparatus may be seen at Hereford Lodge, Brompton. Probably few have seen an artificial sun-generator so powerful as Mr. Wild's magnetic machine. More the pity, for the dazzling flood of light which it is capable of concentrating between the carbon prints would repay the trouble of a journey that extended far beyond Brompton. The construction of the magnetic circle, as described by Wild's machine, appears at first sight to be somewhat complicated. Its working principle can, however, be readily understood. The machine consists of a series of powerful magnets which are connected with revolving machinery, whose motion is multiplied by suitable driving gear, and the rapid movement causes a stream of electricity—or, what amounts to the same thing, a current of magnetic fluid—to be conveyed from the machine by conducting wires, which terminate in carbon points, between which a light is created which vies with the solar illuminator in actinic power and luminous intensity.

At Brompton, the motive power attached to the producer of electric light is a pretty little horizontal gas engine, which does its allotted work without the aid of steam or steam boiler. A turn of the "gas tap," and steam is at once up, directly the gas is laid on. A measure of carbonetted hydrogen and atmospheric air rushes into the cylinder, where it is ignited by means of an electric spark puff; shunts the heated mixture of hot air, water, and carbonic acid as they rush through the escape funnel; and puff puff continues at measured intervals whilst the engine remains in motion, the currents of electric fluid being obtained from a pan of powerful batteries by means of a connection with the shaft of the engine, which, by an ingenious arrangement, lays on and breaks contact at the instant each is required. I must, however, call myself to order, as the gelatine image is developed and completed by immersion in a saturated alum solution, from whence it has emerged a thing of beauty, a thing to be wondered over, a thing which has no parallel wherewith to aid description. Imagine a thin transparent skin with surface exquisitely curved in inverse relief, shadows elevated, and lights depressed. A skilfully engraved wood-block bears, perhaps, as near a resemblence as can be made by human hand.

I think it quite possible that some day a film such as I have briefly alluded to may be made to do the duty of wood engraving. Experimentalists, I give you the idea—go to work! I cannot here dwell on ways and means, as we must at once proceed to the press room, where stands a dark object of strange appearance and massive construction, somewhat of a "cross" between a Nasmyth steam hammer and a blacksmith's anvil. This powerful object will always afford a powerful protection to Woodbury's patent, as the machine is indispensable—its cost most costly.

The hydraulic press to which I am referring must not be considered as one of ordinary make, the niceties of the process to which the press is applied rendering necessary an accurate and strictly even pressure. The plate of soft metal (which is intended to form a printing matrix) consists of an alloy of lead and antimony, and. in appearance, resembles block tin or "clean pewter." The plate of soft metal is adjusted on a movable steel bed, the gelatine punch (if I might so describe it) is placed in contact with the lead surface, and the whole is carefully put in position under the hydraulic press. The to-and-fro motion of a lever communicates motion to a powerfully constructed pump; the pump communicates the whole amount of pressure it bears to every square inch in the cylinder; an upward movement ensues, and the gelatine film gets a terrible squeeze. To guard against a destructive crush and flattening of surface, and a bulging out of sides, a little sentinel, simple and ingenious of construction, watches, and, in time, gives a mute alarm. The mechanism of the watcher consists of a light iron rod or wire, which is placed in contact with the outer edge of the soft metal; to this rod is attached a compound lever movement, which conveys the smallest motion to the sentinel rod at the end of the machine. A magnified danger signalled by the sentinel denotes 'tis time to turn off the pressure; and the plate being withdrawn, on stripping from its surface the gelatine film, an exquisitely engraved "die" presents itself, which extracts from the novice beholder an involuntary shout, "Wonderful!" The mould needs trimming. "Puff! puff! Whir-r!" and the work is accomplished. A few strokes of the gas-engine communicate motion to a circular saw, and, by these agencies, the moulds are cut to shape much more expeditiously than I am capable of describing the operation.

After removing slight defects in the mould with a knife, it is ready for the printer, who stands before a circular turntable, which moves on its supporting centre. At the back of the printer stands a "bake-tater-can"-looking affair, which, on examination, turns out to be a copper boiler, its cover pierced with circular openings, which receives the bottles that contain the transparent ink or pigment. The ink, being composed in part of gelatine, needs an occasional application of heat to maintain fluidity.

The printer commences operations by opening a frame of box-like shape, the cover, which is composed of thick cast iron, being sufficiently heavy to produce the requisite pressure. The mould is placed in position, and a narrow streak of the transparent ink is poured on its surface by the operator who, bottle in hand, performs the operation. A piece of prepared Rive paper is adjusted, the cover shut down, and the movement which pushes on the table fastens the press last in hand. Another press, by the move, now faces the printer, when the processes of wiping, inking, &c., are repeated as before. By the time the table has made a complete revolution, the prints are ready for removal as each frame comes in front of the operator, who removes the picture and places it on to a bench close at hand, whence it passes into the hands of a lad, who scrapes off the superfluous gelatine that adheres to the margin of the print; and the picture is then ready for the alum fixing bath, which converts the tissue into leather. A slight rinse in plain water and the drying bring up the *finale* of the varied operations I have endeavoured to describe.

A word or two in conclusion, in reference to the principle on which the Woodburytype is based. It would be difficult to imagine a more ingenious adaptation of widely separated ideas than Mr. Woodbury's invention presents. Printing from an impression made on soft metal is by no means new idea; the production of a gelatine mould is not a new idea; the production of pictures in transparent gelatine is not an original notion; yet an adaptation of three old ideas to act in combination as a perfected whole is a stroke o constructive genius which few could command. Woodbury richly deserves protection, and I trust the new company will prosper.

Concerning the quality of the pictures produced by Woodbury's process there can be no difference of opinion, that in the present state of photo-mechanical printing the pictures produced by Mr. Woodbury's invention approach nearest to silver printing; in some respects the results are even superior, but the application of the process is not unlimited—it is limited to size, and, in a degree, limited in application. Copies of paintings, works of art (such as engravings, &c.), patterns, vases, porcelain-ware, and many other objects, are by it reproduced admirably. Rich of colour, brilliant in quality, the Woodbury pictures run a dead heat with silver so long as portraiture remains out of the field of competition. In portraiture, however, it remains, as yet, a partial failure, as a thin film of the coloured ink, by adhering to the whites of the print, imparts a flatness which the lowering of the highest lights of the image causes. That the process is a valuable one is a fact indisputable; that a wide field is open for its application is even now made evident. Yet, for the encouragement of those who are racking their ingenuity in other branches of mechanical photo-press printing, I would advise, Work on; there is ample room for all. Each practicable plan discovered will find its special sphere of usefulness. The world of art lovers is large, and demands for pictorial productions have not yet wearied. There is a great future for photo-mechanical printing.

AMERICAN PHOTOGRAPHY.

BY DR. H. VOGEL.

In my first letter from New York I gave a sketch of my experience during the first day of my sojourn in that city; but the rapidity of subsequent journeyings to the Cleveland Exhibition, &c., compelled me for the instant to postpone the narration of any further observations until a later period. I should deem myself altogether wanting in courtesy were I not to acknowledge in the first lines of this communication the truly hearty manner in which I was received on my first arrival; among others, MM. Kurtz, Anthony, Wilcox, Adams, Holmes, Merz, Hall, Joy, Tilmann, as also the amiable president of the American Photographic Association, Mr. Bogardus, strove with all their power to render my stay a happy and pleasurable one.

The firm of Bogardus, photographic and fine art gallery, is one of the oldest in New York, having been established in 1843, and possesses two studios in the Broadway, one of which, however, is fitted up as a permanent fine art gallery, containing pictures by American artists. The building is from cellar to roof wholly taken up by art productions, mostly portraits of American celebrities, and some of them, more especially those on opal glass, confirm at once the well-known reputation enjoyed by the firm.

Among other studios on the Broadway may be specially mentioned those of Mr. Frederick and Mr. Sarony. The latter gentleman (whom we have previously mentioned as the introducer of photo-crayons), despite his fluency in speaking the English language, is certainly a Frenchman. His mode of carrying on business was in itself original. He receives the finest of ladies in his shirt sleeves (not a very remarkable circumstance, perhaps, in America), and poses his sitters with all the vivacity of a dancing master. Of his curtainless studio I have already spoken. He uses a movable pedestal and a Kurtz reflector. Among his clients are many of the New York actors and actresses.

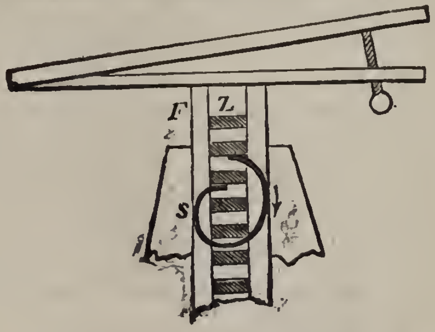
The same may be said of Gurney, who at one time was the first photographer in New York, although now rivalled by younger skilful artists. In regard, however, to his arrangements for the reception of visitors, fitting up of dressing rooms, &c., he still enjoys pre-eminence among his brethren. The studio is in the neighbourhood of the Broadway, being situated in that magnificent street called No. 5 Avenue. The principle of the construction of his glass rooms (among which is one with a southern aspect, previously mentioned) is one I have myself considered.

Mr Merz's studio is in Essex Street, situated in the German Quarter. In this neighbourhood there are complete streets full of Germans, and it is seldom indeed that an English house is met with. German is the language spoken in the neighbourhood, and German especially is the nationality of Mr. Merz's clients. His mode of working, in which he is assisted by M. E. Kruger, is, moreover, conducted upon German knowledge and experiences.

In many of the German studios work is carried on during the Sunday, a course of things which is otherwise not usual in America; some of the smaller studios, indeed, do the largest amount of work on the sabbath, by taking portraits of such people who are unable to attend at the studio on any other day. Despite all the laws for Sunday trading, the Germans in America have it pretty much their own way, and work and amuse themselves as they like; and anyone who has witnessed the passage down the beautiful Hudson River, on a fine morning, of a boat-load of singing, laughing, and dancing sons and daughters of the Fatherland, would be very much inclined to believe that the strict solemnization of the sabbath in America had already passed into a fable.

Turning back to everyday life in New York, whose king is business, and whose throne the Broadway, we approach the spot termed Park Row, a broad street whence the tramways of New York spread out in all directions. At this focus of New York business life, where six lines of rails lie parallel to one another, and the space is covered with carriages, omnibuses, and waggons, and the houses from cellar to roof are employed as offices or warehouses, is situated the large photographic depôt of the Scovill Manufacturing Company. The Company occupies the spacious ground and underground floors of a vast building, in which are stored up a large collection of cameras, stands, frames, and other wooden requisites. The factory of the Company I also visited; here everything is arranged for working by machinery, for joiners' or cabinet work would be far too expensive. Circular saws of different sizes, set in motion by steam power, are set up at every bench, and pieces of wood are manipulated therewith in as many seconds as would be required minutes in the ordinary way. In this wise all the portions of photographic apparatus are roughly cut out and formed, being afterwards finished, set together, and polished by hand.

As a particularly practical piece of apparatus, I may point to the somewhat expensive india-rubber bellows-camera, which is, one might say, quite American in its nature. Another arrangement for raising and lowering the camera-stand is worthy of description. The upright foot (F) is furnished with a toothed rack (Z), as in our German camera-stands; but, instead of an endless screw, which easily gets out of order, a much more simple and solid arrangement is substituted in the form of a snake screw (*s*), which, turned by means of a winch, bites into the teeth of



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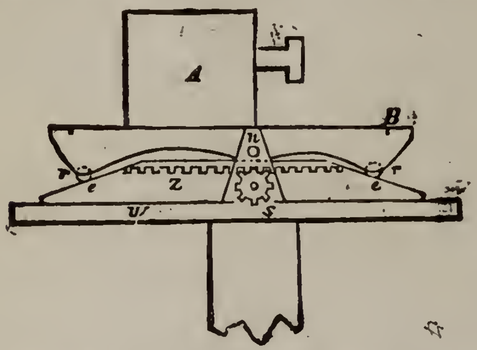
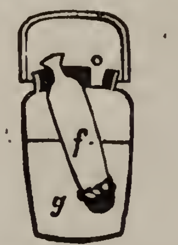
the rack. It the screw is turned in the direction of the arrow, the top of the stand rises; if in the contrary direction, it is lowered. It is, of course, very possible that this simple arrangement may be known in Europe, but, at any rate, I have never myself seen them in stands of German manufacture. I would further mention the Philadelphia camera, distinguished at once for its simplicity, as also for its lightness and solidity; it is made upon Meagher's principle, but it is less heavy and complicated than this. The Scovill Manufacturing Company does only a wholesale business; and their depot of chemicals, cardboard, passepartouts, papers, &c., demonstrates clearly the grand scale of the American market.

Whilst on the subject of photographic apparatus, I may mention another simple and serviceable modification of the camera-stand, which I observed in Anthony's studio, and which allows of the rest (B) which supports the camera being tilted backwards or forwards. The rest is supported by means of the axle, *n*, and also by the little wheels, *r r*; these latter work upon a movable wooden basis (*e e*), furnished with a rack (*z*) and pinion (*s*), and this being turned, the basis (*e e*) is worked to and fro. I saw, moreover, at Anthony's, an original collodion bottle, composed of a wide-mouthed glass vessel, through the perforated cork of which a bottomless bottle is sunk, with its lower orifice closed with felt. Collodion poured through *o* into *g* filters slowly through the felt plug; plates are coated with collodion from the bottle (*f*), and all superfluous liquid is poured back through *o*.





It is customary to employ, instead of glass or silver wire dippers, as with us, implements constructed of hazel wood; and the pneumatic holders generally used are rubber suction instruments, but without the inconvenient india-rubber bulb. The German holders never appeared to me to answer their purpose satisfactorily, but the American ones, on the contrary, seem all that could be wished.

The varnish usually employed by American photographers is, moreover, superior to that used by us in Europe, and sets so hard after a couple of hours that it can be forthwith worked upon for retouching.

One of the most interesting sights in regard to photography is, without doubt, Osborne's photo-lithographic establishment. It is situated in Brooklyn, and is probably in certain directions, without its equal. Osborne's works are well known in Germany, and in America he occupies the post of director of the Photo-lithographic Company, to whom the building and plant belong. The studio is a high and spacious apartment, containing three large apparatus for copying drawings, for the principal duties of the institution consist in reproducing mechanical plans, sketches, maps, woodcuts, and engravings. In close proximity are three dark rooms. The operations here in vogue for obtaining intense negatives are very simple. The negative is developed, washed, and fixed, and then placed, for a period of five minutes, in a solution of iodine in iodide of potassium, to convert the whole of the film into iodide of silver; and subsequently, after a little washing, the plate is further treated with a dilute solution of sulphide of ammonium, whereby an intensely black covering is obtained. Should there happen to be a trace of fog in the shadows, the plate is treated, previously to the application of the sulphide of ammonium, with a very dilute solution of cyanide of potassium, which soon clears up the negative. If necessary, portions only of the plate may be treated with the cyanide solution. The negatives are printed upon chrome-gelatine paper, and this is then inked and washed. The ink attaches itself merely to the solarized parts, and thus yields a picture which may be transferred to stone in the manner of an ordinary lithographic transfer. Osborne occupies himself only in linear productions.

The photographic printing blocks of M. Julius Bien, of New York, I found also worthy of inspection. M. Bien already employs his process in a practical manner, and prepares numerous engravings from the woodcuts of European illustrated newspapers, which are reproduced in American journals. The time required by M. Bien to prepare one of his printing blocks is about twenty-four hours.

Other photographic printing processes are only just being introduced into America. Albert's agents, Mr. Bierstadt in New York, and Mr. Proich in Milwaukee, have not yet commenced operations. Mr. Rye, of Copenhagen, who works the Lichtdruck process, is, however, at the present moment in New York, where he prints off specimen proofs for everybody, and offers to sell his invention for 30,000 dollars. His productions are not equal to those of M. Albert, but he declares himself to be in possession of a peculiar process for drying and hardening the gelatine film, by means of which his printing blocks are perfected in a fifth part of the time required by Albert. In other respects his process is similar to that of Alberttype.

An important future may be safely prophesied for the Woodbury process. Mr. Carbutt, of Chicago, has taken the subject in hand, and has gone to Philadelphia, there to establish a more extensive printing factory. For the larger number of stereoscopic pictures, especially transparent ones, for magic lantern slides, and for technical and scientific publications, this mode of printing will be found exceedingly valuable. The Woodbury productions, indeed, excel those of all other mechanical prints, and resemble the most closely silver prints.

THE ACTION OF LIGHT, DEVELOPER, AND HYPOSULPHITE IN PRODUCING A NEGATIVE.

BY ELBERT ANDERSON.

[Mr. Anderson still proceeds with his dialogue instructions in our Philadelphia contemporary. He here discourses on the *role* of light, developer, and hypo in producing and finishing of the negative.]

A. Here is a shallow rubber tray, rather larger than th largest plates we have occasion to use. Into it I pour a saturated solution of hyposulphite of soda, which has been filtered.

M. This is the fixing solution, I presume! We call it the "hypo," for short.

A. Yes, a most unfortunate name, by-the-bye, inasmuch as it neither fixes the picture, nor, in fact, affects it in the slightes degree.

M. Why, what do you mean? Would not the picture the negative, as well as the printed proof, fade entirely away, if they were not first fixed in this bath?

A. No, certainly not.

M. Ah, bah! Come now, that won't go down, you know!

A. The best way to convince you, then, is by experiment. I coat this plate and sensitize it. There, it is all ready.

M. Isn't there too much light in this room?

A. Oh no. Light up your dark-room (!) as brilliantly as you like. Look! my entire sash is orange glass. I can read in here as well as in the skylight. Why so many photographers work in a dark-room fumbling and shuffling about, in preference to a room as light as day, is rather a mystery to me; that is their business, however. Now I put the plate in the hypo, observe the effect. See, the hypo has dissolved all the iodide and bromide of silver from off the plate, leaving it in pretty much the same condition as it was before it went into the silver bath. All the collodion is here, however, though deprived of its iodides.

M. What does this prove?

A. Patience, patience, wait and see. I now prepare another plate, and before putting in the hypo I will expose it to the daylight. So; now I put it in the hypo.

M. The iodide is dissolved exactly as in the first instance.

A. Yet, Mr. Marshall, the condition of the film has been most materially affected by this exposure to the light.

M. How can you prove this?

A. I now prepare another plate, and pour over its surface some of the developer. Observe the effect.

M. I don't see any effect to observe.

A. The developer, containing acetic acid, as you know, is restrained from immediately producing a precipitate in the silver solution on the plate. It has now been on about a minute or so; we will now dip it in the hypo.

M. Still the iodide is dissolved as before.

A. Finally, I prepare another plate, and before applying the developer I expose it to the light, for only a second of time. So, that's enough. Now, I pour on the developer, observe the effect.

M. The whole of the plate has turned to a dirty brownish black, exactly as the silver solution did in the saucer.

A. Thus we see then, that something happened to the film during that second of exposure to the light, and whatever that something was, it had this effect, namely, to hasten the decomposition of the silver solution in the first place, and to cause it to precipitate only on that part affected by the light, in the second place, which in this case was the entire plate. Now I put it in the hypo; see, the film is no longer dissolved as before. The hypo now has no effect upon it whatever. Now repeat the experiment, covering one half the plate with any opaque screen before exposing it to light. I now pour on the developer, which, as you see, precipitates the silver instantly, but it is only deposited on that half which was exposed. I now wash off the developer under the tap, and put the plate in the hypo. See, only that part not exposed is dissolved, whilst the other half is unaffected.

M. Now hold your horses a minute. You say the iodide of silver is affected by the light; how do you know it wasn't the nitrate that was affected, and not the iodide?

A. That is the way to look at it, Mr. Marshall. Let us prove what we are about step by step as we go. Here is another prepared plate, and before exposing it I wash off all the nitrate thoroughly. There, now I expose it. Shut the window. Now I pour on the developer.

M. Ah! I told you so; see, it don't precipitate. The iodide, then, couldn't have been affected.

A. Not quite so fast, Mr. Marshall; you are wrong; you forget the developer has nothing to act upon, there being no nitrate to precipitate.

M. By Jove! you are right; now what's the next move?

A. I will pour off the developer in this glass, and mix with it a few drops of silver solution. See, the acid prevents immediate precipitation. Now I pour it again over the plate; there, the plate begins to blacken at once.

M. Yes, that's true, but—

A. But what?

M. But still you had to use nitrate, you know.

A. Yes, but the nitrate has not been exposed, having been added after exposure. Your remark, however, is very *apropos*, and we shall see presently that pure iodide of silver is unaffected by the developer, and that the compound which blackens on its application is iodide, with an excess of nitrate.

M. Now I begin to smell an immense mice.

A. How so?

M. After the plate has been exposed in the camera, the light impresses the image, and so affects the plate that when the developer is applied it only precipitates on the image so formed, whilst the other portions of the plate remain intact. You now wash off your developer, and there's your picture. The picture, being already formed, is already fixed, as it cannot be further affected by the light. But when we expose the negative thus formed to light, that portion of the plate not previously affected by the light now in turn is acted upon, and would shortly so affect the whole plate as to totally obliterate the picture, and it is to prevent this that we dissolve it away in the hypo, leaving the image, and not for the purpose (as improperly termed) of fixing it.

A. That is it, exactly. The word photography itself is the most unfortunate of all.

M. Why, you surprise me. Is that also a misnomer?

A. Undoubtedly, inasmuch as light not only does not exercise any influence in producing the picture, but, on the contrary, tends to destroy it; and that the luminous principle (which we call light) is not necessary to make a photograph I can prove by experiment, and take a picture in total darkness.

M. You will, perhaps, excuse me if I am sceptical, but I should mightily like to see this done.

A. It is accomplished in the following manner:—A large prismatic spectrum is thrown upon a lens fitted into a side of a dark room (I do not mean a photographic dark room, but one of absolute darkness), and the only rays allowed to pass through this lens are those situated at a point beyond the violet ray, where there is no light at all; these are directed upon any object, and from that object radiated upon a sensitive plate; in this way an image may be formed by radiations which produce no effect upon the eye.

M. Well, well, that beats cock-fighting.

A. As the above experiment cannot well be performed without all the necessary conditions, I propose to show you an easier application, to prove what I have stated. Here I have an engraving; I cover one-half with this piece of blue glass, and the other half with this piece of orange glass; now I focus this on the ground-glass of my camera. There, look in and see for yourself.

M. I see that portion of the engraving covered by the yellow glass brilliantly illuminated, whilst through the blue glass I see absolutely nothing.

A. Now we will expose a plate. So come and see it developed.

M. Well, upon my word! It has copied most faithfully that part which was totally invisible, whilst the brilliantly lighted half has been wholly neglected. I never should have believed this had I not seen it done. That is really a most curious and remarkable experiment. Speaking of light, in the term as it is understood, what is the nature of this action of light on a sensitive plate?

A. We are not at present prepared to answer this. There are several theories, which we will discuss presently; in the meantime it may not be out of place to mention a few remarkable facts, and to perform some interesting experiments. There are several reasons for supposing that each of the three principles—light, heat, and actinism—included in the solar ray exercise a distinct and peculiar influence upon vegetation. Thus the luminous principle (what we call light) controls the growth and colouration of plants; the caloric principle, their ripening and fructification; and the chemical principal, the germination of seeds. Now, seeds which ordinarily require ten or twelve days for germination will germinate under a blue or violet glass in two or three. The reason of this is, that the blue glass permits the chemical principal of light to pass freely, but excludes in a great measure the heat and light, whilst, on the contrary, it is next to impossible to make seeds germinate under a yellow glass, because it excludes nearly all the chemical influence in the solar ray. You are, no doubt, acquainted with the extraordinary effects of light on chlorine.

M. I dare say I am, but you had better tell it me over again.

A. The intense affinity which chlorine manifests for hydrogen is very remarkable, yet this affinity is called forth by a most singular action of light. For if equal volumes of chlorine and hydrogen gases be mixed together in a white glass vial (they must be mixed in the dark), they will remain for an indefinite period without action upon each other. Now if the vial be exposed to diffused light, combination will take place gradually; but if the mixture be brought into direct sunlight, the union takes place immediately, accompanied with a powerful explosion. Or the vial may be put into a dark place (a cellar, for instance), and a ray of sunlight directed upon it by means of a mirror; the instant the ray strikes it an explosion will occur. Again, if the chlorine gas alone be first exposed to the light, it acquires and retains for a considerable time this power, and if afterwards mixed with the hydrogen, even in the dark, an explosion instantly takes place.

M. Well, well, live and learn!

A. Here, then, is a case in point, of light having commenced an action on the chlorine, which is continued in the dark, analogous to the action on a sensitive plate, which is continued by the developer in the dark room. As this experiment, like the other, requires certain conditions which may be inconvenient, let us get at "something nearer home," as the saying is.

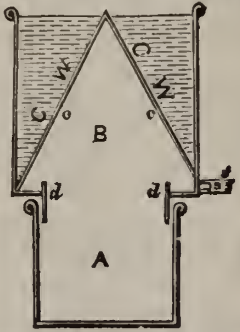
SIMPLE WAY OF MAKING A STILL.

BY J. EDWARDS SMITH.*

I have enjoyed with genuine photographic relish the dialogues contributed to your columns by Mr. Anderson. In general, they announce plain facts, sound sense, and, withal, a spice of genuine wit.

His method of making a still, however, is both expensive and complicated, so I propose here to give you a sketch of an apparatus for distilling pure water which will perform all that Mr. Anderson claims, at one-tenth the cost, and far simpler. It is not original with me. Some sixteen months ago a man told me about it, and I went over to the tinman's, chalked out a drawing on his wall, and an hour afterwards I had the whole affair "biling," and at a cost of only one dollar. Here it is:—It can be made of tin-plate, or, better, tinned copper. It is so perfectly simple that really it requires no explanation, yet, for fear that Marshall, or Roland Vanweike's "Focus," may be tempted to put in their oar, the following description may keep them quiet.

A is a round vessel, about the same height as its diameter, with a stout wire around the top edge; this to contain the water to be distilled.



B is the condenser cylinder, made at the bottom with a shoulder and flange to fit easily into the top of A; the flange runs up a little above the shoulder, as shown in the sketch.

The condenser, B, is also filled with a cone *c* (like the top of a funnel inverted), and tightly soldered at its base, near to the bottom of B; leaving height enough, however, to insert anywhere on the circumference of B the little short tube *e*.

The condenser has no top.

Now to use. Fill A two-thirds with water; put it over your gas (or any other) stove; when the water boils, put on the condenser, B, and fill the upper part with cold water; the steam as generated strikes the cold surface of condenser *c* becomes condensed, and trickles down to the trough at the base, and soon flows out of the short tube, *e*, pure and sweet; *f* is a detached tube, which slips on and off *e*, and serves to conduct the water where desired.

This simple affair will distil for hours, even after the water above the condenser has become quite warm (of course it works faster to change this occasionally, pouring part back into A, to make up for the loss by evaporation). It will prove a blessing to many a photographer, and, I may add, it is not patented.

A great advantage that this machine has over all others is, that every part can be kept perfectly clean, and with little labour.

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* *Philadelphia Photographer.*

PHOTOGRAPHY AND WAR.

BY DR. VOGEL.

Dr. Vogel, writing to our Philadelphia contemporary, has some graphic remarks on the photographic influence of the war in his own country. He says:—

"I left my Fatherland when everywhere was peace. I return, and the evidences of war meet me at every turn. The principal business of our photographic galleries is no longer with the living, but with the dead—the portraits of those that fell in battle. Everywhere I see reproductions of cartes-de visite, negative or positive; and the plates which two months ago were ready for the cleaning bath are now valuable, as their originals are no more.

"In glaring contrast with this serious aspect of affairs, we are flooded with numberless caricatures of Napoleon, Eugenie, and conquered "grande nation," the red pantalooned children of which traverse the streets of the neighbouring fortress of Spandau in such numbers, that one feels almost inclined to fancy one's self in France instead of Germany.

"The war, in its main phases, apparently approaches its end. Our most sanguine expectations have not only been realized, but the reality is much more glorious than what we dared to expect. I arrived too late to offer the Fatherland my services, but hundreds of my colleagues and my scholars have gone; and many a one rests now under the cool green turf of France. Petsch, of the firm of Lœscher and Petsch, well-known in America as the author of 'Gems of German Life,' is in camp before Metz. Many proprietors of less known establishments are marching on Paris; but to fill up the vacancies, many expelled photographers from Paris arrive here. Amongst these is Romain Talbot, a Prussian by birth, but living for the last twenty years in France. He had to leave with wife and child. So also Erwin Hanfstangel, and the well-known photographer Reutlinger. The Royal Polytechnic Academy, the field of my activity, stands empty. My apparatus is all in the field before Strasburg, to 'take' the fortifications. My assistant, Mr. Schwier, and my 'silver boy,' were, eight days before my arrival, engaged for this purpose by the Secretary of War. I was not a little surprised to meet these peaceable citizens, on my return, in warlike uniform as 'field photographers.' If I had arrived home a week sooner, it would have been my fate to go; and, seriously speaking, I would not have been sorry.

"The work of the photographer in front of the fortress is a dangerous one, but very interesting. With a camera placed exactly horizontal, they take a landscape view, and from this view topographical maps are constructed. A number of engineers and draughtsmen are connected with them, and all the French fortresses will be photographed by them.

"The employment of photography in war is yet rather in its infancy; but much more extensive use is made of photolithography for the multiplication of the French maps of the general staff. For an army advancing into the enemy's country the possession of exact maps is of more importance than the daily bread; and as it is very seldom known beforehand what special maps will be used, it is of great importance to have a method at hand by which a hundred or a thousand reproductions can be made in a very short time. This is possible by photo-lithography. So far, all these maps have been made in Berlin, and have been forwarded to the army. In future wars (which we, however, do not desire), a travelling photo-lithographic atelier in the rear of the army may be established to save time. Not a small portion of our successes are due to these maps. The French army were very scantily supplied with maps. On the officers who were taken prisoners only a few maps of the Rhenish provinces and plans of Berlin were found, not a single map of France. That they would need the map of their own country the most never entered the heads of these gentlemen."

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ON DRY-PLATE PROCESSES.

BY HERMANN KRONE.*

AGAINST two fell enemies has the dry-plate photographer continually to wage warfare, irrespective of the smaller evils to be combated in the pursuit of his vocation. The first is the self-reduction of the sensitive film; and the second—more trivial, perhaps, than the first—is dust. Over both these foes can the experienced operator triumph to a certain extent, driving them within very narrow limits; but their total extinction is a task which he can never hope to fulfil.

The Self-reduction of the Dry Sensitive Film is, for the most part, caused by the presence of free nitrate of silver in prepared plates which have been but imperfectly washed. The stouter the film (supposing it to be a simple washed collodion film, without preservative) the more readily can the residual nitrate of silver therein be converted, by means of a dilute solution of salt, into harmless chloride of silver. Horny and very tenacious collodion films, and especially those into which such substances as albumen, gum, dextrine, gelatine, &c., are incorporated, are never thoroughly freed from the superfluous nitrate of silver; and it is only in the Taupenot process that the silver of the first washing becomes paralyzed by the iodized albumen, even after a very careful washing. There exists, nevertheless, no other manner of remedying this evil than that of washing thoroughly with water as free as possible from organic impurities; and, in order that no waste of time or water takes place, a systematic mode of proceeding should be adopted. The plate, when taken from the dipping bath, should be placed in a water bath to collect the greater portion of the free nitrate, and then washed on both sides with a plentiful stream, being finally rinsed with filtered water to impart a mechanically pure surface. In the preparation of dry plates requiring to be twice sensitized (and, therefore, twice washed) the operation must each time be conducted with equal care. Intervening washings—for the purpose, for instance, of removing uniodized albumen—are of minor importance, and need, therefore, no special precaution.

Under ordinary circumstances, the period during which the plate will remain in good condition depends, in a great measure, on the purity of the water used from organic matter; or, in the case of albumen plates, upon the freshness of the albumen and the clearness of the silver bath. The self-reduction of the film in out-door photography is, moreover, due to

(A.) *Great Heat.*—The reduction commences in those places which have been most attacked by the heat: generally at the margin of the plates. For this reason it is well to preserve the dark slides, plate-boxes, and camera, during hot, sunny weather, in a cool locality in the shade.

(B.) *Long-continued Rainy Weather.*—No effect is produced upon albumen plates by a damp atmosphere of this kind so long as there is no sudden change of temperature. The Gordon gum-gallic and Russell tannin plates, however, undergo modifications which develop into irregular spots, where, sooner or later, the self-reduction of the silver takes place.

(C.) *Sweating of the Plates* on the setting-in of cold weather, and during the morning and evening dews in a warm locality, where the drying operation is imperfectly conducted.—In this case drying marks are caused, which, while a fruitful source of self-reduction, are, moreover, themselves apparent on the development of the image.

There are yet other causes to be enumerated which bring about self-reduction of the film in well-washed and well-stored plates. Wherever this takes place the image develops very slowly, as if under-exposed, and appears covered with a dull red film, which robs the picture of all vigour.

Dust—which becomes deposited upon the plates after they are already placed in the dark slides—has been the ruin of numberless fine negatives, and the bane of many photographic tours. As a matter of course, this arch enemy of photography (and truly no painter can be more inveterate against the black art) is only to be worsted by constant employment of the dusting-brush, a strict attention to the cleanliness of the apparatus being of the utmost importance. If each dry plate is placed in a separate dark slide, and the latter has been previously well cleaned, but little risk is run of having dust spots upon one's negatives. Most dry-plate photographers, however, employ the otherwise very desirable method of enclosing the plates in a box provided with the Dallmeyer changing arrangement, by means of which the whole number are exposed, one after another, in a single dark slide, and much saving of porterage thereby effected. In pushing the dark slide into the box, and taking out and putting in the plates, rare opportunity is afforded for the introduction of dust; and it is not to be wondered at, therefore, in the development of the plates, that a series of them is frequently spoilt by dust spots. During our own landscape tours we invariably use the Dallmeyer arrangement, both for negatives of large and small size; but always take the precaution, before fitting the slide into the dry-plate box, to dust it carefully, and, each evening, to wipe over the plates themselves, as also the frames of the slide, by means of a broad, soft camel's-hair brush. Moreover, care must be taken to cleanse the moveable slit in the plate-box, and the groove into which the slide fits, from particles of brass, which, from time to time, will be found deposited therein. A further precaution is, that of allowing the box always to rest in such a position that the plates can never be rubbed on the prepared side, otherwise a constant disturbance cannot fail to rub off portions of the film.

As a rule, the failures of dry-plate working may be ascribed less to the faults of the process adopted, as to the inexperience and lack of knowledge on the part of the operator. Many questions must be taken into consideration, which, although in the wet process entirely unknown, are inherent to the success of dry-plate photography. Thus the prevention of the formation of drying marks upon the film is of the first importance. A collodionized, sensitized, and well-washed plate, without further coating, dries much more rapidly than one treated before the last washing operation with albumen, tannin, and the like, a plate coated with a preservative always possessing the same drying character and properties as those of the substance employed for protecting the film. The period requisite for drying the plates is a matter which the operator must study for himself. It is important, however, that in the course of drying the plates should remain undisturbed, and not be removed to another locality or temperature, as any step of this kind will inevitably result in the formation of drying marks, rendered apparent on development. When the preparation of the plates is required to be hastened, the operator is sometimes tempted to accelerate the drying of a moist corner or margin by the application of a warm hand, and such a way of proceeding, except in the case of Taupenot plates, is sure to result in latent markings upon the film. In the Taupenot process the film is composed of albuminate of silver, with iodide of silver upon iodized collodion (the collodion being sensitized and washed, iodized, dried, and again sensitized and washed); and this may be dried, even with interruption, without leaving traces. Mr. England's twice silvered Fothergill plate, on the other hand (the collodion being sensitized and washed, albuminized, washed again, and then further silvered and washed), in which the film consists of collodion having in its pores very finely divided albuminate of silver and iodide of silver, is so difficult to dry that the slightest alteration of position is sufficient to provoke the defects alluded to. This process is, indeed, the most liable to dry markings; and next in rank to the Taupenot process, as regards freedom from such evils, is the Russell tannin method.

Nearly all failures inherent to dry-plate working are, in fact, more special than general in their nature—as, for instance, the rising of the film, formation of blisters, fogging, &c.—and their cause and remedy must be looked for in individual descriptions of the various processes.

ON HELIOTYPY AS A MEANS OF REPRODUCING WORKS OF ART.

[A recent number of *Art* contains the following article on heliotypy, as the method by which the majority of its illustrations have been produced.]

The consideration as to the relative merits of engraving and photography for reproducing works of art has of late assumed a high degree of importance. An acute art critic, by no means favourable to the recognition of photography as a fine art, but fully sensible of its value in literal faithfulness of reproduction, some time ago wrote, "Were we sure that photographs of pictures would last, we are not sure that we should not be content to see engraving numbered amongst the extinct arts." Paul Delaroche, enraptured with the newly discovered art of photography, saw in it an immense service rendered to art in various phases, but especially in presenting the painter with a "quick method of making collections of studies which he could not otherwise procure without much time and labour, and in a style very far inferior, whatever might be his talents in other respects." This marvellous system of accurate reproduction and multiplication of pictorial impressions had scarcely been fully developed before the fatal shortcoming of instability in the productions of the new art began to force itself on the attention of its admirers, and to sap public confidence in its value and its fitness for producing pictorial records of subjects possessing more than a transient interest. Besides this stigma of instability, another defect has characterized photography, and materially limited its value, especially in relation to art reproduction. The multiplying operations being dependent on the chemical action of light, the process of printing has not only been adversely influenced by the caprices of the weather, but has been, under the most favourable circumstances, a somewhat tedious and protracted operation, quite unequal to the rapid production of large numbers of impressions often required in the popularization of art.

The possibility of removing these shortcomings has for years past occupied much of the attention of scientific photographers, and many methods of printing have been devised which have, in greater or less degree, accomplished the end in view. Experiment for the purpose has been extended in various directions, in each of which, however, whilst something was gained, something was still lacking. In what is termed the "carbon process" absolute stability was secured, without any loss of beauty, by employing a method in which pictures in permanent pigments were obtained by the action of light. The results were beautiful, but the general limiting conditions of light-printing still remained. To secure rapidity of production, other experimentalists have endeavoured to produce, by means of photography, printing surfaces yielding impressions by the ordinary processes of copper-plate, lithographic, or letter-press printing. In the majority of these attempts an almost insuperable difficulty was met with at the outset. It is scarcely necessary to point out that there is a very wide difference between the kind of gradation found in a photograph and that in any kind of mechanically printed impression. Hence, although a photographic image could be produced in relief or intaglio on a copper-plate, or in a fatty ink on a lithographic stone, it was, from its continuous gradation, unfit for producing impressions by any of the methods of press-printing.

In the midst of these difficulties it became apparent that unless some new principle of press-printing could be devised, there was little hope of securing a method of photo-mechanical printing which should yield really satisfactory impressions. Fortunately for photography as a reproductive art, two methods of printing, involving new principles which have met the difficulty, have been discovered. By each of these true, photographic gradation is accurately reproduced, and the conventional gradation of stipple or hatching entirely dispensed with. To the first of these, Woodbury's photo-relief printing process, we may briefly refer as the process to which we are indebted for the frontispiece to the first number of *Art*, the copy of Léon Perrault's painting, "Pour la petite Chapelle." On the second method, known as "Heliotypy," we may dwell at somewhat greater length, as nearly all the other illustrations in this magazine have been produced by it.

The principle upon which heliotypy is based is analogous to that of lithography, but is much more comprehensive, and admits of results of which lithography is quite incapable. The possibility of producing a printing surface in some degree analogous to a lithographic stone by means of photography is based upon a well-known action of light in rendering gelatine and similar bodies, under certain circumstances, insoluble. When bichromate of potash, or a similar salt of chromic acid, is added to gelatine, no change takes place if the mixture be kept in the dark: the gelatine retains its capacity to absorb cold water or to be dissolved in hot water. But if a layer of this chromated gelatine be dried and submitted to the action of light, it gradually loses its capacity to absorb water, becoming finally hard, repellent of water, and insoluble. This principle, the germ of which was discovered by Mungo Ponton in 1839, has undergone gradual development and application in various modes of photographic printing, to M. Tessie du Motay, in France, and Herr Albert, in Bavaria, its most extended and valuable development being chiefly due. This acknowledgment is due to these gentlemen for having shown the possibility of a certain mode of working: the *modus operandi*, or precise details upon which success depended, they have not made known. The heliotype process, of which the bulk of the illustrations to this journal are examples, has been perfected by Mr. Ernest Edwards, who, from the general facts known, has arrived at a special mode of working, new in its details, and successful in its practice.

The heliotype, as we have said, is analogous in many respects to a lithograph. It is produced upon the same principle, and in a closely similar manner, depending for its possibility on the production of a surface which will repel the adhesion of a fatty ink in every part in which it has absorbed water, and the facility of rendering that surface absorbent of water in every part but that containing the image to be printed. But there is this noteworthy difference between lithography and heliotypy: the lithographic stone absorbs water in every part of its surface whereon an image in lithographic ink has not been previously produced; but it has no graduated capacity of absorption. The slightest touch of a fatty body, even a finger mark, will cause the stone to repel water, and take ink: where any greasy touch has been, wherever the faintest line of the image exists, it repels water completely, and takes ink; where the stone is clean and no part of the image is, it absorbs water completely, and rejects ink. The picture must therefore consist of touches of black and white, and any gradation therein must, as we have explained, depend on lines or points, and not on varying depth of colour in a continuous tint. The printing surface in the heliotype process possesses an important superiority over the lithographic stone; it possesses what may be termed a discriminative power of absorption. This discriminative power in the surface is produced by the action of light upon passing through a photographic negative, the lights and shadows in which regulate the amount of light transmitted. The printing surface after such exposure has acquired the power to absorb water in the exact ratio in which it has been protected from the action of light: it also takes ink in the exact ratio that it has, in consequence of the action of light, acquired the power to repel water. Hence the mechanically printed image in a fatty ink is as true a transcript of the negative as the silver image printed by light from the same negative. Thus all the truth and all the facility of delineation which belong to photography direct from nature, all the literal faithfulness and precision in rendering not merely forms, but the spirit, expression, and manner of the original in reproducing works of art, which characterize photography, are preserved by heliotypy, with the superadded charm of permanency, and the advantage of rapid and unlimited production.

(*To be continued.*)

Correspondence.

THE FORTHCOMING ECLIPSE.

Sir,—In an article on the above subject in your impression of Sept. 30, you proceed to condemn the "penny wisdom" of our present economical Government in refusing to aid, with either money or ships, the proposed expedition to Spain and Sicily to observe the eclipse which is expected to take place in December next; and this, I believe, on the authority of *Nature*, who stated that the Government had refused, on the ground that the fund at their disposal was not for that sort of thing.

I was, at the time, greatly surprised at the refusal, and entirely agreed with the spirit of the able article in question, greatly deploring the backwardness of our own Government—which was wont to be the first in such things—as compared with that of America, which, I believe, has voted something like $30,000 for the occasion, although having further to go than us.

But in the columns of a daily contemporary of Nov. 4 there is a paragraph taken from *Nature*, in which it is said that no deputation waited on the Government at all, and lays all the blame on the managers of the now "famous Joint Committee." I find in the same paragraph, also, that letters were written, but to the wrong department; and that the letters of the Government department—"the last," they believe, "written not later than the beginning of Sept., stating, among other things, that an application should be made in Oct., when the possibility of granting ships could be better discussed—have not yet been brought before the Joint Committee, which has just been summoned by the secretary for the 4th of Nov." They finish by saying that the Government "are prepared to aid, both by money and ships, when an application shall be made."

Now, sir, it seems to me as if there has been very culpable negligence or mismanagement somewhere, in consequence of which a delay has been caused; and now, I believe, it is too late to construct large instruments for this important occasion. What is coming to scientific committees? Nevertheless, I hope to hear of some steps having been taken, or going to be taken, so as to ensure an expedition even without large instruments.

Apologizing for this somewhat lengthy epistle, I remain, your obedient servant, **Henry W. Hobbs.**

South Lambeth, Nov. 7th, 1870.

[Our correspondent is clearly correct in saying that there has been culpable neglect somewhere. It must be remembered however, that the dead-lock which has existed was caused by a distinct and categorical refusal on the part of the Admiralty to supply a single ship, its answer being that the object in question was foreign to that for which funds were placed by Parliament at the disposal of the Naval Department. How the change has been effected we cannot tell. Many persons will be disposed to regard it as the result of pressure from without, and look on the explanations as somewhat clumsily covering a retreat from a discreditable position.—Ed.]

TUNICARE.

Dear Sir,—As opinions seem to be so divided as to the merits of "Tunicare," will you allow me to use your columns to suggest to the maker of this preparation that he should send out small sample bottles, say at one shilling each. I think many people would then give "Tunicare" a trial who now object to spend 3s. 6d. for the experiment.—Yours faithfully,

November 3rd, 1870. **Oxoniensis.**

ENCAUSTIC PASTE WHICH DOES NOT SMEAR.

Sir,—Having received many valuable hints from the generous correspondents of the Photographic News, I shall be only too happy to offer my mite, if you think, from the specimens enclosed, the difficulty complained of by "P. S." in your last issue is sufficiently overcome to justify its insertion.

I, like him, found the encaustic paste, even as supplied me from a London house, liable to the serious disadvantage he complains of, and, in spite of cautioning my patrons not to rub the surfaces together, I have never seen them afterwards without finding them in some degree *minus* their lustrous finish, and sometimes, as "P. M." suggests, so smeary as to make one disposed to abandon it altogether.

I think I have lately improved matters considerably by the simple addition of enamel collodion to the wax and benzole, which seems to me to bind it more tightly together, and gives a surface equal to the other, and on which you may rub your finger without making any perceptible smear, such as I have always found with the compounds usually recommended. The proportions I do not find important, a little practice being the best guide. A few drops of scented oil will give an agreeable perfume.—Yours, &c., **W. V. Amey.**

251, *Commercial Road, Landport, Portsmouth.*

Talk in the Studio.

Prize Prints.—In a recent award of prizes to cabinet pictures, intended for illustrating our excellent contemporary the *Philadelphia Photographer*, Messrs. Robinson and Cherrill received a gold medal for the best portrait compositions; Mr. W. C. North, of Utica, N.Y., one for the best plain portrait; and Mr. J. C. Brown, of Philadelphia, for the best landscape.

Carbon Prints for Publication.—We learn from a local paper that some fine paintings are at present in course of exhibition in Mr. Mayall's gallery at Brighton, photographic copies of which, printed in carbon, will shortly be published.

Hawks and Pigeons.—A French correspondent of the *Times* says:—"We are to have a pigeon telegraph to Paris. Twenty words for 10f.—cheap enough, you will admit, considering how very small a burden a pigeon can take on its distant flights. But here photography comes to our assistance. A single pigeon will carry many thousand microscopic words, to be read at Paris by a powerful magnifying glass. But the Prussians, we hear, have let fly a large number of hawks in the neighbourhood of Paris to wage war upon the carriers. Certainly this gigantic war has been prolific of strange devices and expedients."

Photographic Copies of Maps.—A correspondent of a daily paper says:—"In one of the many balloons recently pierced by German bullets and captured there were found a number of maps of the central and southern departments, meant for the Loire and Lyons armies. Being all photographic copies, they gave the Germans the agreeable certainty that the peculiar method invented and employed by them for multiplying military drawings as yet remains a secret of the Berlin War Office. This process, which is called anastatic, admits of an unlimited number of copies being thrown off, no matter whether the original is in ink, pencil, print, &c., and is as expeditious as it is cheap." Our readers are familiar with Lieut. Waterhouse's description of the process in question.

"The Divinity which doth Hedge a King."—The Special Correspondent of the *Echo*, describing the distribution of Iron Crosses at Versailles, says:—"There stand two gentlemen sketching; one is from the *Illustrated London News* and the other from the *Graphic*, so that friends at home will have this brilliant scene well depicted. There, too, stands the representative of the London Stereoscopic Company, Mr. Nottage, jun., who has gone through much during the campaign, but informs me that he has a wholesome objection to being cut down in the flower of his youth, which he hears he would certainly be if he caused a camera to be pointed at the Crown Prince. He has had it on good authority that he would be a dead man several minutes before it could be satisfactorily proved that a camera-obscura is not a mitrailleuse in sheep's clothing."

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To Correspondents.

Admission to the Photographic Exhibition.—We have received from many correspondents applications for tickets, and enquiries relative to admission to the Photographic Exhibition. It may be desirable to state at once, that on five days of the week the public will be freely admitted on signing their names in the visitors' book, and on Saturdays by payment of one shilling each. The chief use of the tickets is to afford members an easy method of inviting their friends, by the distribution amongst them of tickets; and, in the next place, to give to members and their friends admission without payment on Saturdays. If tickets had been a necessary condition of admission we should have forwarded them to the various applicants.

J. M. (Jarrow).—The general plan and proportions of your proposed studio are excellent; twelve feet width is sufficient. The amount of glass, side and roof, on north side will be valuable, and a portion of the light is easily stopped out if necessary. With such a fine expanse of light on the north side you do not absolutely require any on the south. A small portion (say half the amount you propose) might be occasionally valuable, but, as a rule, would not be wanted. Nothing would be gained by having the height at the eaves greater than eight feet. In that case, if you have the height fourteen feet at the ridge, you will have a convenient pitch. Sheet glass we should recommend, and as large panes as you conviently can have. The glass need not come within eighteen inches or two feet of the ground.

Fuming Paper, etc.—A correspondent calls our attention to an answer to "Anglicanus" in our last, in which, after referring in three distinct sentences to Col. Stuart Wortley and processes with which his name is associated, we add a fourth, in which we say we have "no personal knowledge of the gentleman, but think he is trustworthy." Our correspondent very naturally expresses surprise, seeing we have often referred to personal communications from Col. Wortley, whom we have had the pleasure of knowing for years, and of receiving from him many valuable hints by which our readers have benefitted from time to time. The answer No. 4 really referred to an advertiser in our pages, in regard to whom the querist we were answering made enquiry.

A. B. A.—We cannot account for the condition of your bath. The treatment described should not have produced such a result. Try a very short immersion, and constant movement of the plate, and let us know the result. 2. The white gas tubing is utterly unfit for the worm of a still, and the water would show a deposit. You must have a copper tube, brazed.

Ignoramus.—We can scarcely devote the necessary space to describing the process of copying in this column. The copying of a card portrait is just the same as the copying of any other picture. See that it is well rolled; place in a good light; place the camera in front, about one foot distant from the picture; then extend the camera until the focussing-screen is about one foot from the lens. We cannot state the exact distances, as these must depend on the focus of the lens; but for a quarter-plate we have mentioned about the right distance. Then proceed in the ordinary manner, giving a sufficiently long exposure.

J. C. Smith.—Obtain Mr. Hughes's shilling Manual; you will get it at 379, Oxford Street. If you study that, and carry out its instructions, you will progress rapidly.

Collodion.—We should decidedly recommend No. 1. A triplet will do, but a rapid rectilinear by the same maker is better. The Year-Book will be ready at the end of the year.

J. Barnes.—The portions of the surface of the print which have peeled off must have been stuck to some other surface and been torn by separation.

T. W. T.—If the old toning bath be added to the hypo bath the gold will be thrown down, but it will eventually require to be removed from the metallic silver with which it will be melted up. The best plan is to throw down the gold from the old bath with sulphate of iron; it may then be easily re-converted into chloride of gold. 2. Chloride of silver added to the old fixing bath will be dissolved, and will be thrown down again as sulphide by sulphide of potassium. 3. The lime salts present have little effect in the matter. 4. Rinsing to remove acid before fixing is generally sufficient, but if much acidity be manifest, the addition of a little alkali to the rinsing water would be an advantage.

T. H. Redin.—If you refer, you will find that "W. W." quotes the formula from a former correspondent, merely repeating it for convenience. The shadow on the face is a little too deep and opaque. A little reflected light would give the shadow transparency.

Baffled.—The spots are due to imperfect fixation, and are probably caused by the formation of minute air-bubbles on the print whilst in the fixing bath, and these bubbles prevent perfect fixation. Such spots rarely show until after the print has been exposed to light for a short time.

H. Watson.—You will find instructions in our last three or four Year-Books for printing on opal glass by the collodio-chloride process. This produces the best results. If you wish to use camera printing on wet collodion, then you cannot do better than use all the formula and manipulations given for the Eburneum process in several Year-Books, or the formula for photo-crayons, or for collodion prints for transfer, full details for all of which we have given in several Year-Books and the News. In each case the principle of producing the image is the same as for opal glass, but opal glass will be used instead of plain glass, and there will be no transfer of the film. There is no book on the subject. Should you not be able to find the articles, we will refer you to specific formula. No apology is needed for consulting us. We are glad to aid our readers.

Belmont.—Both the comets and the excess of intensity point to a similar cause, namely, the use of a collodion with an insufficient proportion of a bromide. If you add from half a grain to a grain of bromide of cadmium to each ounce of collodion we think it probable that you will get rid of both troubles.

Z. (Bedford).—The price of a print depends much on circumstances. Under ordinary circumstances about half a guinea would be right for such a print as you mention; but under other, perhaps even half that amount. 2. Glue is a good material for mounting. 3. White is the best colour for a vignette mount; grey for a matt. 4. You will not get a quicker process than that you name. 5. Sometimes the use of an old negative bath for printing makes toning difficult. 6. If the negative be quite sharp the solar print should be sharp; but enlargement reveals defects in a negative not apparent in a small print.

A. H. Fry.—See answer above to "Baffled;" your spots appear to be from a similar cause. Some samples are more prone to the formation of these minute bubbles than others.

W. Amey.—You have probably used the platinum solution too strong. Try it weaker, and also older. We have found the Obernetter paper tone well with several toning baths. Have you tried the formulæ we have published? Your cards contain some good qualities. The plan of adding collodion to the enamel paste seems useful.

W. H. Fisher.—Received. Thanks. We will write.

J. M. (Perth, West Australia).—The paper merely contains a black powder when it reaches our hands; but, from the description, the precipitate was probably permanganate of silver.

J. Cunnington.—In our next. Your letter arrived too late for convenient insertion in the current number.

Finem Respice.—No. 1, both for material and work. Thanks.

Comet.—Are you certain that the card was enclosed to us? We find nothing of the kind in your letter; an assistant who opened it is uncertain as to any enclosure. If we find it has been mislaid, we will state our opinion of the photograph, and return it.

E. G. W.—See first paragraph.

J. W. Smith.—See answer above on this subject.

W. W.—See answer above on this subject.

Several Correspondents in our next.

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Photographs Registered.

Mr. H. Mower, Exeter,
Two Photographs of Exploded Boiler.
Mr. Cornaby, Lowestoft,
Three Photographs of Rev. W. H. Chapman.

THE PHOTOGRAPHIC NEWS.

VOL. XIV. No. 637.—*November* 18, 1870.

CONTENTS.

PAGE
The Exhibition of Photographs in Conduit Street 541
The Late Alleged Piracy 542
The Eclipse Expedition 543
Photography and the War 543
The Press and the Exhibition 544
The Cameo-Medallion Carte-de-Visite. By Carl Krziwanek ... 546
A Holder for Development and Redevelopment. By M. Carey Lea 547
On Washed and Fumed Paper. By M. Baden, of Altona 547
Albumen Coated Plates, Tunicare, &c. By Samuel Fry 548
Proceedings.—South London Photographic Society—Manchester Photographic Society 548
Correspondence.—Copyright Conviction: Brooks *v.* Knight—Piracy and Copyright 549
Talk in the Studio 551
To Correspondents 552

THE EXHIBITION OF PHOTOGRAPHS IN CONDUIT STREET.

GENRE AND ART STUDIES.

THE exhibition in Conduit Street is suggestive of a wider and a higher art culture amongst photographers than any previous exhibition we remember; but there are fewer attempts at the production of *genre* compositions displayed here than we have seen on many previous occasions. Some of the older exhibitors in this branch of photography are unrepresented, but there are one or two new aspirants for distinction.

The most ambitious picture of this class is "The Trysting Tree" (53), by Messrs. Robinson and Cherrill. This is a combination print of the size and shape (23 inches by 16) which this firm have for some time adopted for similar pictures. The subject is one of the class which has generally been a favourite with Mr. Robinson: a rural figure, with English landscape illustrating some phase of every-day life. We have here a rustic maiden, reclining near the trunk of a large tree which gives the picture its name, a suggestive placard attached to the bark warning the traveller of "man-traps" in the vicinity. The figure is natural, the landscape charming, the composition and the photography unexceptionable; but the picture as a whole is perhaps less effective than some of the former ones from the same hands. The huge bole of the tree stretching from top to bottom of the picture without foliage or branches, its enormous bulk and foreground position permitting only the lower portion of the trunk to be introduced, is a very difficult subject to deal with in any picture, and especially in one in which the aid of colour is not permissible. The subject, too, is more homely and less poetical than many of the former pictures with which we naturally compare this. Whilst, therefore, it possesses high technical perfection, and is very cleverly treated, we think it will scarcely become so great a favourite as some of its predecessors. The "Load of Ferns" (54), and "Down to the Well," are two single figure studies, admirable in pose, accessory, and rendering, which would have gained much in interest if the model had been more pretty or picturesque.

Mrs. Cameron contributes largely to the present exhibition, and some of her pictures show undoubted advance in technical excellence: there is less startling slovenliness in the shape of dirty plates, torn films, and blurred images. The definition is in many cases sufficient, and the manipulation is improved. We speak very unwillingly in such plain terms of the blemishes of the work of an indefatigable lady, but we feel it a duty to do so when her works come so prominently before the public, and for two reasons: in the first place, her work does possess an amount of art feeling which claims attention and admiration on the ground of its suggestiveness, and makes the faults the more lamentable; and in the next place, this very quality of suggesting more than is realized has tempted many nebulous art critics to go into raptures about these works as something far beyond the range of ordinary photographic achievement. Be this as it may, and admitting for a moment the art excellence, we feel the more bound to protest against the technical shortcomings, for the simple reason that if the results are recognized as something worth imitating, it will be very easy to reproduce the faults without catching anything of the redeeming features. Some of the examples here have some fine qualities. "Beatrice Cenci" (244), a head nearly life-size, treated after the manner of the well-known painting. The model is a very charming one, and the low tone and suggestive rendering do not provoke injurious comparison with the painting so much, probably, as would have been done by a more brilliant and perfectly made out photograph. Although this is one of the finest of this lady's pictures we have seen, it is marred by a piece of drapery in contact with the retiring side of the face, so like it in tint and texture, that contour of the cheek is almost lost, or swelled into an indistinct mass. "May" and "Dora" are also very fine heads, the charming model being rendered with hazy poetic sweetness. The undoubted suggestive beauties of many of these pictures only renders more lamentable the disregard of technical excellence, and the "brumeux" effect, of which a distinguished French artist complained on examining the examples under notice.

Mr. Rejlander has several very fine pictures, chiefly single figure studies, and some of them exceedingly charming. A lady with a distaff is admirable in pose, lighting, and arrangement, altogether possessing a rare tenderness and sweetness. A gentleman painting is remarkable for the skill with which the wrist of the painter is turned as he gives a dainty touch to the canvas. The lady before an open window looking out on the landscape is a very capital little composition. The picture upon which Mr. Rejlander has manifestly expended the largest amount of thought and care is entitled "Crito," illustrating a passage in Plato's Dialogues. The subject of the dialogue is the Duties of a Citizen. Socrates is visited in prison early in the morning by his young disciple Crito, who brings him tidings of the approaching arrival of the ship which determines the day of his death, and urges him to escape. Socrates endeavours to demonstrate to him that it is the duty of a good citizen to submit to the laws. In the course of his argument he puts the question, which, with its answer, Mr. Rejlander has appended to his picture:

> "Shall we say that the city has done us an injustice, and not passed a right sentence? Shall we say this, or what else?
>
> *Crito.* "This, by Jupiter, Socrates."

Socrates is half uprisen from his couch, at the end of which Crito is seated, and with raised hand gives this answer to Socrates, evidently with enthusiastic energy, whilst the philosopher listens reflectingly. The figures are chosen, posed, and arranged with rare skill, the traditional head and features of Socrates being wonderfully rendered. The whole feeling of the subject is singularly well embodied; the picture is quiet, severe, and classic in treatment. Whether photography can ever legitimately deal satisfactorily with imaginative subjects is, doubtless, open to question; but here is a difficulty fairly combatted, if not overcome, and, both in a technical and in an artistic sense, the picture is worthy of Mr. Rejlander.

The studies of heads (nearly life-size) by Col. Stuart Wortley in another form illustrate the danger of attempting to illustrate a specific thought by means of a model placed before a camera. We do not by any means say that this can be done, but in attempting it the artist is placed at a serious disadvantage. His own conception of the thought may be perfect; and his work with the pencil, being the outcome of his own conception, might also be perfect. But the unplastic nature of photography trammels him seriously, as, however great his skill, he can render no more of his idea than is possible to his model when draped, arranged, and lighted with suitable care. These heads are, in many respects, marvels of artistic and photographic skill. Massive, brilliant, and solid—and, in some cases, rarely delicate—they are masterly examples of photographic art. "The Sibyl" is an exceedingly grand picture. The pose of the head, the arrangement of drapery, the light and shade, the gradation and modelling, are all perfect; but the face is scarcely sibylline, and a sense of disproportion is felt between the face and the title. Taken simply as a study of a head, it has many qualities which have never been surpassed, the relief and solidity, without sacrifice of delicacy, being something marvellous. "My Queen" (106), on the contrary, from its delicacy of feature, its winning sweetness of expression, and tenderness of treatment, rare in photographs of such a size, is a head which will readily find acceptance as the queen of the majority of beholders. "Viola" is an admirably picturesque head, well posed and finely rendered in many respects. It would bear deeper printing, and might have been improved by a slight modification in arrangements of the drapery. All the other heads have marvellous qualities, and show that imperfect definition, fogginess, and general disregard of technical qualities are not necessary conditions of success in dealing with very large character studies.

Amongst the new exhibitors in *genre* pictures is Mr. Adam Diston, of Fyfe. We have been favoured from time to time, during some years past, with examples of the photographic compositions of this gentleman, and have always felt that he possessed ability well worthy of cultivation. The four little cabinet pictures, of subjects which would have pleased Wilkie, are well worthy of examination. "The Broken Toe" is very homely, perhaps too homely in its major incident; but the interior, although a little overcrowded with effects, is very cleverly rendered. "The Peep Show" (228) is also exceedingly clever; as are "Waiting for Change" (225), and the "Young Artist" (226). Mr. Diston will, if he goes on in this direction, do some excellent work.

Mr. Hubbard is a little disappointing this year. After "Pensive Thoughts," "Peeling Potatoes," and "Stolen Moments," his picture entitled "A Study" (310) is unsatisfactory. It was, we believe, done under difficulties; and, this remembered, it possesses some good points of composition and chiaroscuro; but it lacks refinement, both in feeling and treatment.

Mr. Lafosse, of Manchester, has portrait studies which possess force, but fall short of his portraits.

Mr. Marshall Wane exhibits some portrait studies which are singularly perfect in all technical points: delicate, round, transparent, and tender in a very rare degree.

Mr. Warwick Brookes exhibits a series of portrait studies possessing fine qualities, but a little unequal in excellence. One entitled "A Study" (160) is an exceedingly beautiful female head, posed with grace and dignity, and exceedingly fine and rich in chiaroscuro. The modelling and gradation are perfect.

Amongst the grand portraits exhibited by Mr. Blanchard, the "Italian Girl" (24) comes under the class we are noticing, and is worthy of taking very high rank; charmingly posed and arranged, the light and shade and general feeling are exceedingly satisfactory. If the background could be thrown a little back the picture would be perfect.

The landscape pictures, which are treated as pictorial studies, we shall refer to hereafter.

THE LATE ALLEGED PIRACY.

On another page the correspondence is continued on the subject of copyright and piracy. Mr. Brooks states the other side of the case in reference to the recent conviction of G. W. Knight, and unquestionably gives the facts a new complexion. In some former remarks on the case, based upon the information before us, we expressed a conviction that a miscarriage of justice had occurred, for which, however, the defendant was himself largely responsible, having only fallen himself into the trap he voluntarily set for Mr. Brooks. At the same time we expressed unqualified condemnation of the practice of employing informers to induce tradesmen to transgress the laws with the sole view of instituting prosecutions.

Mr. Brooks evidently condemns the employment of informers, and denies that he has ever adopted such a practice. He points out that Knight had previously pirated his works and been forgiven on promising not to renew the offence He points out, also, that the plan of cutting off a portion of a genuine copyright print, so as to fit the cut edge of many pirated prints, is an old and well-known trick, so that, even in any instance where it might be employed as an honest test, it would carry no weight, being a trick out of the recognized *repertoire* of dishonesty. He also points out that the view we recently maintained as to the legitimate meaning of the word *original*, in relation to a photograph of a picture, has already been held on the bench. We hold that a photograph made direct from a painting is an original photograph of that painting. For instance: suppose Mr. Brooks—or any one else—possessed a painting by Landseer for which no copyright had been secured, the conditions having been neglected. Copyright in a photograph of that painting might be secured; and, providing evidence could be produced that no other photograph or copy had or could have been made direct from the painting, conviction could be secured, if the sale of other photographs copied from the original photograph were proved. This was our view, and it appears that such a decision has actually been made.

On the moral ground, Mr. Brooks's claims to protection in his copyrights are unusually strong. He has adopted the course recommended by those who, in some degree, on former occasions, have palliated piracy as the popularization of art. He has issued photographic copies of his copyright pictures, and issued them at a rate so cheap that they readily reach the hands of the million. He has also, as we have it on record, pursued those who have despoiled him of his property mercifully rather than vindictively. He has carefully, so far as he could perceive how, complied with all the conditions of our disjointed and imperfect copyright laws; and if a weak joint be found in his armour at all, it arises from the imperfection of the copyright law rather than from neglect or wrong on the part of Mr. Brooks. He has paid money for his copyrights to those whose brain and labour produced them; he has registered them so as, in his judgment, to comply with the law; he has produced them at a cheap rate to benefit the public, and, as we hope, himself; but the existence of several copyright statutes with different conditions, some—those referring to engraving—making a remedy against piracy troublesome, uncertain, and costly, lays him open to some legal quibbles, whether well or ill-grounded we have not ascertained. But his position is one which will doubtless claim the sympathy of the honest part of the community, who can have no tolerance of the notion that the property he has bought and paid for shall be appropriated by those who have not paid for it, on the pretended ground that there is a flaw in his title.

Mr. Cunnington proceeds with his examination of the bases of copyright, special and general, and it is not our intention to enter into any general argument on the subject at present. Mr. Cunnington has evidently carefully studied the subject, and writes upon it with great clearness and intelligence; but we fear that, notwithstanding his expressed dispassionateness and recognition of the legitimacy of copyrights, he has evidently a bias towards sympathy with its infringers, and—on what ground we know not—is manifestly regarded as on their side by many of those concerned. "The abstract rights of individuals," he remarks, "must give way to the interest of the public." This is his cardinal error. The rights of property are not simply abstract; they are concrete, and inherent. They exist independently of the perfection or imperfection of the laws which protect them. A man's ideas are his property, and when he embodies them, either in a picture or in words, the embodiment is his own property. The affirmation that private property should be ceded without consideration for alleged public good is clearly as much opposed to the practice of states as it is to abstract right. The moral right to copyright cannot, we conceive, on any plea, be successfully disputed, and we hope to see the existence of a statute which protects all copyright in perpetuity, precisely as all other property is protected.

In the cases quoted, in which a doubtful interpretation of the law has been pressed against the pirate, the recognition of this moral claim is manifest. That a decision clearly against the law should be given on moral grounds no one would advocate; but where the interpretation of the law is doubtful, moral considerations will generally turn the scale. In the case decided by Sir R. Carden, our correspondent points out that although no fraudulent intention was manifest in the presence of Mr. Graves's name on certain prints, a conviction was obtained because that name was present. But the accused had *fraudulently* sold the prints. The Act does not speak of fraudulently appending a name, but of fraudulently "selling and publishing" a picture with the wrong name. It is probable that the Act intends to refer to the fraudulent use of a name; but it is so worded as to permit another interpretation, and the moral claims of the case naturally gave a bias in favour of justice in a case where law was uncertain. We think that if our correspondent will bear this fact in mind, it will throw considerable light upon many of the cases which have passed, and are now passing again, under his examination.

THE ECLIPSE EXPEDITION.

It appears that if it is not too late now to organize and prepare, an expedition will be sent from this country to observe the eclipse, and that the government have granted two thousand pounds and means of transport for the expedition for the purpose. An attempt has been made, it appears, on behalf of the government, to make out a case against the joint committee for tardy application, and application to the wrong quarter. This has drawn forth a reply from the Astronomer-Royal, pointing out that the application was made in June, in the form and to the office which has repeatedly been recognized by the government in similar cases before. On the 10th of August came the refusal which was likely to reflect so much discredit on the country. On October 21st, after the discussion in the public press, an intimation was received that the matter might be reconsidered. We hope that the gentlemen whose names we have already mentioned as prepared to undertake the various duties will still be able to undertake the duties, and that the final issue will prove that all is well that ends well.

PHOTOGRAPHY AND THE WAR.

The following, which recently appeared in *Licht*, one of the Berlin journals, shows the influence exerted upon photography by the Franco-German war. In the first days after the declaration of war, and during the mobilisation of troops, when everyone whose lot had become an uncertain one was anxious to leave behind him some token of remembrance, the business of portrait photographers was in such full bloom that many of the studios were incapable of getting through the work thrown upon them; but now an unmistakable reaction has set in, and from all sides complaints come to hand that this branch of the art especially is at a perfect stand-still. Under these circumstances, photographers are casting about for new speculations in which their talents may be of service, and whence they may even derive some good from the war. In some of the studios operators are busy with the multiplication of war despatches, with the vulgarisation of portraits of eminent generals, with the copying of battle scenes, and satirical representations of the enemy's leaders, with which, in truth, a very good business is done. Other photographers have followed the soldiers through the campaign, partly for the purpose of portraiture, and partly to obtain views of interesting localities.

Pictures of battlefields in France, the scenes of German victory, the resting places of many brave soldiers and brothers, and the cradle, let us hope, of German political unity and greatness, will always have considerable interest among the public, and repay the time and trouble involved in the production of such sketches. May our busy colleagues who have thus chosen to join the expedition be successful in their bloodless efforts, and may they be well recompensed for the trials and difficulties they must inevitably meet with. That the latter are by no means few or insignificant is testified by the many letters that reach us, all of which unite in confirming the extraordinary troubles through which a photographer in the field has to suffer. A correspondent in one of the journals says:—"Your remittance and telegram have been received. As far as regards Sedan, we have done everything in our power. It was not enough that we had during the whole time weather unbefitting a dog, but we were, moreover, on every side beset with difficulties. When I had obtained the necessary permission from the Governor to photograph in the town, I hastened at once to the park of artillery, there to commence operations, as the cannon were day by day removed, and the number gradually lessening. Of this collection, notwithstanding the bad weather, I was successful in securing a couple of pictures. Next day I went over Balan to Bazeilles, where, unfortunalely, there was no military guard to be seen; the weather was tolerable, and I hoped to finish a dozen views during my excursion. As soon as I had discovered a well of water in one of the houses, I forthwith proceeded with my work; but there soon collected together a mob of disorderly peasants, who commenced by reviling us in the most shameful manner, and subsequently threw stones at our apparatus and tent to prevent further progress, so that after a short time we were compelled to make good our retreat. As we returned to Balan, it came on to rain, and, wet to the skin, we arrived home just in time, luckily, before the gates were shut for the night. The next day I prayed for an escort, but was only laughed at for my pains, being told that for Sedan itself there were scarcely enough soldiers, and none could be spared for photographers' body-guards." The letter ends with an affirmation, on the part of the writer, that he will not easily be prevailed upon to undertake another similar journey.

The Government photographers are not, of course, troubled with difficulties of this nature; but then, on the other hand, they have to work in the presence of greater danger. Those sent by the Minister of War to Strasburg, who arrived just before the capitulation, were required to operate under fire, the enemy making the apparatus a mark for his shells.

We have hitherto spoken of photography as victors, but with our colleagues on the other side matters must be much more serious. Who, for instance, during the present conditions of things in Paris, would wish to have his portrait taken? We think that even the vanity of a Frenchman would scarcely go so far as to wish for a photograph merely for the purpose of parading his uniform. Besides, the majority of the best Parisian photographers have left the metropolis, and have gone away to England; as, for instance, Reutlinger, Salomon, and others. Many photographers are, however, even worse off than these banished ones. M. Goupil, who, as is well-known, purchased the patent of the Woodbury Relief Process for France, has been compelled to raze his grand establishment at Asnieres to the ground. We may mention that Nadar, who always had a desire to render himself popular, and to that end cultivated the profession of an aëronaut, has assumed the position of Chief of the Balloon Postal Service.

Finally, we should like to allude to one matter of some interest to international photographers. Many photographic processes are patented in France which are not so in Germany. For instance, M. Braun, of Dornach, in Alsace, has paid considerable sums of money—some say twenty thousand dollars—for the sole right of practising Swan's carbon process in France. What would have to be done in case Alsace should become German? In any case, we fear M. Braun will suffer a great deal of loss.

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THE PRESS AND THE EXHIBITION.

The press notices of the Photographic Exhibition have not been so numerous or so extended up to the present moment as they have been on some previous years; but some have been very discriminating, and all complimentary. As such notices are generally interesting to our readers, both now and for reference, we reprint some of the most important.

From the Times.

The fifteenth annual exhibition of the Photographic Society was opened last night in the Conduit Street Gallery, and will remain open until the 30th November. As no charge will be made for admisson on any day but Saturday, when the fee to non-members will be one shilling, all who take an interest in the development of photography will have an opportunity of studying specimens of a high degree of excellence in every branch of the art. The number of contributions from the Continent is, unfortunately, comparatively small this year; but, on the other hand, there are several examples from America, and Captain E. D. Lyon again sends a very interesting series of photographs of Indian temples, remarkable for the beauty and elaboration of the architectural detail. The variety of processes now at the command of the photographer is tolerably well shown by the specimens in this year's exhibition. There are photographs of children taken with chemicals so sensitive to the action of light that the smile on the face of a babe may be caught and delicately pourtrayed on paper, while the five landscapes by Mr. Russell Manners Gordon, illustrative of different processes, are not less remarkable for exquisite beauty of tone. The application of the Woodburytype process to the purposes of instruction will be seen with pleasure by those engaged in the work of education. The micro-photographs by Mr. Thomas Higgin, printed and published by Messrs. Robinson and Thompson, and exhibited in St. George's Hall, Liverpool, during the last meeting of the British Association, form a series of enlarged photographs of insects, diatomaceæ, &c., which must prove exceedingly useful in the class-room of the teacher. Another use to which the same process has been applied is the production of an ornamental water-mark in paper. This is done by taking a photograph on a gelatinous film, and then washing away those portions of the gelatine which have not been acted upon by light. The remaining gelatine can be made sufficiently hard to produce an impression of the picture on lead, and, of course can be used to print from. Of landscape photography, there are many excellent examples, among the contributors in this department being Mr. F. C. Earl, Messrs. Robinson and Cherrill, Mr. Vernon Heath, Messrs. F. and W. Bedford, Mr. F. E. Currey, and Mr. W. D. Sanderson. The exhibition is especially rich in portraits, varying from a miniature half an inch long to a picture nearly two feet in length, and taken from life at one sitting. Altogether, the exhibition is one of great merit, and will fully repay a visit.

From the Standard.

This exhibition, which, taken as a whole, is even finer than that of last year, is now open. The contributions by members, professional and amateur, are very numerous, and throughout attain a high standard of excellence and pictorial effect. Beyond all doubt, the finest landscape in the collection is the largest (thirty inches by sixteen inches), "The Ledr Valley, Moel Seabod, under a Mist," by Mr. F. C. Earl, of Worcester, which, alike in definition, in gradation of distances, and softness of general tone, is perfect. His "View of Worcester Cathedral," his "Woodland Path," "Brook," and "Hillside," display kindred excellence. Successful and prominent exhibitors, also, are Mr. Vernon Heath and Messrs. Robinson and Cherrill. The former competes worthily with his views of "Andley End" and the "Burnham Beeches." Nothing can be finer in woodland studies than his "Oak," "Beech," and "Cedar." The "Trysting Tree," by Messrs. Robinson and Cherrill, satisfies every requirement of artistic effect, and their series of inland views and seashore pieces are remarkably striking. Of these, perhaps, "Daybreak," "The Turn of the Tide," and "Evening on Culverden Down," are the gems. We were not specially enamoured of "The Beached Margent of the Sea," or "The First Hour of Night;" of the gull in the former, and the moon in the latter, one might say, with all deference, that they come in "questionable shape," &c., and to our notions the gloom of the night hour, as shown in the photograph, is not consistent with the brightness even of the "fag end" of the moon which appears in this picture. No. 169, "A Seagull," with its inscription, though possessing no intrinsic merit of its own, is a significant criticism on the expedients of those ingenious and ambitious aspirants for fame who resort to extraneous aids for pictorial aspects, and of which we have examples in the clever stereoscopic slides of Messrs. Breeze, which, beautiful or singular in their effects, may be objectionable in some judgments, as marred by the transparent dodges by which angels, moons, and forked lightnings are introduced, we admit most tellingly.

We would willingly have noticed at length the admirable series exhibited by Captain Lyon, by Russell Manners Gordon, and W. D. Sanderson, but for the exigencies of time and space. Of Colonel Stuart Wortley's numerous and, in their way, effective views of seas and clouds, we prefer "What are the wild waves saying," as the most genuine and natural. In general, the others display a lurid and unnatural gloom, inconsistent with daylight effects, either at dawn or evening. The four landscape sketches and conservatory studies of F. G. Lloyd are very good—the latter are especially soft and even in tone. Also the Isle of Wight views of F. Hudson, and particularly his study of Ferns, are very beautiful. Nor must we omit to rank with them F. E. Curry's views of Lismore Castle and Scenery.

Of the portraits, first and foremost should be placed the silver photographs of V. Blanchard, which have only one fault, if it be one, that of being a little too dramatic and pronounced. The "Study of an Italian Girl" is a genuine work of art, though the portrait might pass for that of a Hindu, so far as the features are concerned. Two portraits above these, by R. Slingsby, are, for their size, as direct—not enlarged—portraits, the finest we have seen; the one on the right, with Rembrandt-like effect, is really noteworthy for the roundness of the figure and the clever management of the light and shadows.

Among others which well merit attention and praise are those by O. G. Rejlander, E. Bondonneau, N. Briggs, and Marshall Wane, the photo tints of E. Cocking, and S. and E. White's cartes-de-visite. But we shall not be far wrong in pronouncing the enlarged portrait (No. 389), in crayons, by E. Havell, as the gem of all, though, from its unfavourable position, it may well be overlooked. As regards the portraits by Mrs. Cameron and her imitators, however much artists may rave about them, we think them as more than singular and good; but, like half-dimmed prints, they leave a longing for something less obscure. The enlarged portraits, as a rule, are not very successful. R. Faulkner's instantaneous photographs of children and animals, on the contrary, are very sharp and clear.

The admirable series of micro-photographs and illustrations of natural history, by Mr. T. Higgin and Messrs. Robinson and Thompson; the specimens of carbon printing, heliographs, heliotypes, and especially the illustrations of the Woodburytype, with its application to transparencies, photo-engraving, and embossing, really merit and will obtain and repay, careful and prolonged attention and study, alike from photographers and men of science.

From the Daily Telegraph.

English photography has made head against such atmospheric difficulties as are not common in other countries where the art is practised. The unfovourable conditions in which the photographer is compelled to work in a climate such as ours have had the natural effect of stimulating his invention and developing his resources. The published transactions of the Photographic Society, and the periodical exhibitions given by this and kindred bodies, have assisted in a very great degree those improvements of heliography which have left the labours of St. Victor, Daguerre, and Talbot far behind. On Wednesday the fifteenth of those annual displays, which are at once so popular and so useful, was opened to the public, the president and members of the Society and their friends having met in the Conduit Street Gallery on the previous evening to open the short November season with the customary conversazione.

Disappointed, in some measure, by the war, of those expectations which the council was led to entertain, in June last, as the result of Mr. Pritchard's mission to the Continent, the members of the Photographic Society may yet be congratulated on the general excellence of a collection not, perhaps, the less enjoyable for being small. The progress made in all branches of photography and the merits of different processes are well exemplified—more completely, it may be said, than last year. For example, the Woodburytype, which was only represented last year by a single specimen, is now honoured with a prominence which its important qualities deserve. The Welsh landscape photography of Mr. F. C. Earl, of Worcester, is as good as landscape photography can possibly be; one of his productions being extraordinary for its great size and marvellous truthfulness of atmosphere. In portraiture, Mr. Valentine Blanchard distinguishes himself most notably, and cannot fail, by the likenesses of well-known people here brought together, to increase his reputation. The "built-up" photographs of Messrs. Robinson and Cherrill and of Mr. Warwick Brookes—whose portraits with natural backgrounds are curiously perfect pieces of combination—infuse a great deal of pictorial spirit into the exhibition. Mr. G. S. Penny's experiments with the coffee process, and Mr. Russell Manners Gordon's more ambitious trials of different other processes, will be admired for their pleasing effect as much as for their scientific success. Indeed, it would be a long though pleasant task to speak in detail of all the fine qualities in Mr. Gordon's array of scenic photographs. In the department of subject photography, emulating the painter's work of composition, Colonel Stuart Wortley stands first in the order of merit as well as in the account of industry. His cloud studies and moonlight scenes at sea—sunlight, of course, in reality, but imitating with complete illusion the aspect and influence of the moon—are admirable. Captain Lyon's Indian subjects are of great value; as are the attractive pictures, by Captain Bedford Pim, of the Ober-Ammergau Passion Play. Messrs. Bullock Brothers, Mr. Vernon Heath, Messrs. F. and W. Bedford, Mrs. Cameron, Mr. Brooks, and Mr. Netterville Briggs maintain in this exhibition their high standing as adepts in photography.

From the SOUTH LONDON PRESS.

Photography is a progressive art. Every year marks its development, and a wise step has been taken by the Photographic Society in organizing an annual exhibition to enable the public to judge of the continual progress. The exhibition is held at 9, Conduit Street, Regent Street. Through the courtesy of Mr. J. Spiller, hon. sec., we were enabled to be present at the private view on Tuesday evening, and enjoyed a rare treat. The walls were covered with jems of photographic art, some of them most delicious in treatment, and the whole forming a collection greatly in advance of last year, attractive as the exhibition then was.

It will not be expected that we should give anything like a detailed notice of what met our view. A word or two on a subject so special must suffice. The portraits of Mr. Valentine Blanchard (including very fine ones of Mr. Tom Hood, Penge, and Mr. J. Ashby Sterry, Sydenham), were allowed by all to carry off the palm. There is nothing like them in London. Mr. F. C. Earl had a superb landscape, "The Ledr Valley Under Mist"—perfection. Mr. Slingsby, of Lincoln, exhibited a portrait of a lady so fine that it hung "a bright particular star." Messrs. Robinson and Cherrill had some capital landscapes, and Col. Stuart Wortley's work was, as usual, superb. Mr. G. Wharton Simpson lent some enlargements by Albert Moore, which were happily described as "seeming to mark an era in this department of the art." Mr. Rejlander came to the front again, and we were glad to see Mr. Woodbury—the inventor of the Woodburytype—well represented. Mr. Jabez Hughes, the Queen's photographer, Isle of Wight, was, we were pleased to see, a contributor. His work is always charming.

South London has lent its aid to the completeness of the exhibition. We have, by the way, a Photographic Society of our own on this side the water, and we have likewise our photographic annuals. From the comparative seclusion of West Square emanated one of the leading men of the day, cherished by the court, and enjoying the patronage of all the aristocracy. The South London contributors on the present occasion appear to have been few in number, but their works were of high quality.

From the BUILDER.

The private view, on the 8th instant, of the Exhibition of the Photographic Society, at No. 9, Conduit Street, enables us to congratulate all those concerned on the high standard of excellence displayed. We do not limit our remarks to portraiture, or to any distinct branch of photographic art. There has been an advance along the whole line. In size, in clearness of definition, in rapidity of execution, in tint, in tone, and in permanent durability, we can cite distinct instances of success not previously reached. Nor can we omit to call attention to the fact that science, as well as art, has attained a new *organon* by the introduction of the actinic processes of delineation. Their value and ready applicability are as yet far from being fully appreciated. In the case of the office-work of the architect, the engineer, the surveyor, or the hydrographer, it very seldom occurs that a drawing is made of which it is not desirable to keep a copy. Two or three copies are, in very many instances, absolutely necessary, and would be always made, as a rule, if cost were no object. Each copy, if made with sufficient accuracy, and neither traced nor pricked through, involves an amount of labour nearly equal to that of the original. All this will be saved hereafter,— may be saved at this moment,—by photography. The heliotype process will produce, in little time, and at small cost, absolute *fac similes* in ink of any drawings of the kind. Not only the lines themselves, but written dimensions, notes, or signatures upon the drawings are at once reproducible; and the expense of triplicate copies will fall short of that of a single, and far less accurate, copying by hand. Should the golden time of Parliamentary deposits and parish plans ever return, the boon thus given to the hard-worked engineer will be found to be immense.

Among the most striking portraits on the walls, we call attention to those by Mr. Warwick Brookes, of Manchester, especially to 160, called "A Study,"—a veritable study for transparent depth of tone,—and 158, "A Portrait." Col. Stuart Wortley has sent a series of heads, about seven-eighths the size of life, produced with a vigour and a delicacy that seem to leave little to desire. Among these "My Queen" (106), deserves the title,—an exquisite likeness of a very lovely face. "The Sibyl" and "Jealousy," close by, are valuable pathognomonic studies. Mrs. J. M. Cameron has sent a screenful of her well-known shadowy portraits taken slightly out of focus. Among these the first place must be awarded to "Beatrice Cenci," a magnificent adumbration of a beautiful and physiognomically noble face, in the pose and drapery of the well-known Italian sufferer—one of the most favourite and often reproduced subjects in the whole range of portraiture. While we are far from saying that this sun-picture is free from fault—the light which bounds the left cheek, for instance, being far from happy (as it is not discernible whether it represents hair or drapery)—yet the imaginative effect of the head and face, and the mode in which they seem to look out, as if by magic, not from a surface, but from a transparent depth, are such as to show that we may yet obtain, from the aid and service of the sun, examples of a more subtle portraiture than can be limned by human fingers. We think that "My Queen" and "May" are the first photographic portraits that justify this opinion.

In admirable contrast, both as to size and sharpness of definition, to Mrs. Cameron's charming gallery, are the "instantaneous photographs" of Mr. R. Faulkner. No. 87 gives us four-and-twenty children—the very counterfeit presentment of life. There is one little creature, to the left, laughing at the spectator, perhaps the most inimitable; but the excellence of all is of the first order. It is clear that the production of these lovely and life-like portraits has demanded much more than the mere manipulation of the camera and the bath. Thoroughly sound artistic taste, and tact and knowledge of the disposition of children, must have been combined with perfect apparatus, pure and well-applied chemicals, and complete mastery of manipulation. We have never seen children (with rare exceptions) quite satisfactorily photographed before, and we shall be conferring a great benefit on all parents who seek to preserve, not only the features, but the fleeting graces, of the fairy tribes of the nursery, by sending them to see Mr. Faulkner's portraits. His "Studies" (88) are also admirable; but the children are unique.

Among landscapes, the most important in size, and one of the most excellent in all respects is (44) "The Ledr Valley, Moel Scabod, under a Mist," by F. C. Earl—a veritable peep into Wales. Mr. Russell Manners Gordon gives specimens of six different processes, demanding the attentive comparative study of the artist. "On the Thames, Richmond," by the Taupenot process, is, perhaps, the best. Colonel Stuart Wortley contributes some of his powerful sea-side pieces—with the waves breaking into spray. Mr. Stephen Thompson's Venetian palaces, Mr. Vernon Heath's English forest scenery, Messrs. Robinson and Cherrill's "Turn of the Tide" (66) and "First Hour of Night" (68), and some Indian architectural photographs, are among the most beautiful contents of this department of the exhibition.

We should not omit the fine portraits by V. Blanchard, especially the "Studies" (23 and 24), or a portrait (18) by Robinson and Thompson. The series of photographs (299) illustrating the last performance of the passion play at Ober-Ammergau, by Captain Bedford Pim, R.N., is also extremely interesting.

In a very different walk of art the plain enamels, called photoceramic, of Mr. A. L. Henderson, are very fine. With them rank the enlarged portraits on opal, by Bullock Brothers (205-207). The photo water-marks, by Woodbury's process, and the Woodburytype transparencies, which, we are informed, are literally printed on glass, are all suggestive of appliances of photography as yet unattempted.

Very valuable for educational purposes, and even for higher physiological studies, are the micro-photographs, illustrating entomological subjects, diatomaceæ, &c., by Messrs. Robinson and Thompson (370). They render microscopical information permanently accessible to every observer at a glance, and cannot fail to be appreciated by the physiologist. For illustrations of lectures and class teaching of natural history they are invaluable. The *infusoria* are magnified to the extent of 800 diameters. The sting of the bee, the tongue of the cricket, the spider, the grass-fly, and other entomological dissections, show the infinitely delicate detail of the workmanship of the great Master Workman.

The Alberttype, of which we have heard so much, is poorly represented by the "Pardubitz Hunt" (403). The Woodburytype is very admirably illustrated. See Nos. 414 to 420. The Heliotypes, printed in printer's ink in a printing-press, by Messrs. Edwards and Kidd, fill a dozen frames (397-399). Among these we notice four highly-imaginative landscapes by an artist who makes his appearance for the first time on these walls, and whose mode of treatment is admirably rendered by heliotypic printing. The album of *fac-simile* reproductions of Albert Durer's and Van Leyden's works, printed in carbon by Edwards's process, is a treasury of art which no student should be content until he has purchased. Mr. J. C. Belton's "Matt Paper Prints," from Titian's drawings (430-431), are simply magnificent. We confess that we have used language which may appear unbalanced, or even exaggerated, to those who have not studied the admirable works which we have selected as the best where almost all are good. But the verdict is that of impartial criticism; and we are not disposed to attenuate expressions of admiration which are fully merited by the objects described. After all, in most instances, it is to the grasping, by actinic chemistry, of the subtle graces of nature herself, that these triumphs of the photographer owe their highest charms. The reproductions of artistic creations, excellent as they are, fall short of such forgeries upon nature as the "Beatrice Cenci."

Extracts from the *Daily News* and other journals in our next.

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THE CAMEO-MEDALLION CARTE-DE-VISITE.

BY CARL KRZIWANEK.*

In the spring of last year a friend of mine in Genoa forwarded to me a specimen of a new description of carte-de-visite, whose extraordinary brilliancy particularly attracted my attention. The picture, so said my correspondent, had been produced by the "Processo Crozac," which had acquired some popularity in Italy. On a minute examination of the carte, I found it to be a print upon albuminized paper, which had been coated with gelatine, and finally pressed in the form of a medallion. The surprising effect of the picture was due more to the clearness given by the gelatine coating, than to the pressing or stamping of the portrait; in the same way as all our albuminized prints invariably look better in the washing bath than when dried and mounted upon cardboard.

Since that time I have seen further examples of this kind of portraiture, and have been made acquainted with many methods of producing them; but of all these none have fully succeeded in my hands with the exception of the process I am now about to describe, which, after some experience, I can confidently recommend.

The apparatus necessary for the production of cameo-medallion cartes is very simple, and comprised in the following articles:—

(*a*). A four-footed metal water bath, capable of being heated by means of a spirit-lamp, into which a square porcelain dish is placed, whose overlapping sides fit over those of the water bath. This dish, which is furnished with a lip, is employed to maintain the gelatine fluid at a high temperature.

(*b*). The stamp, consisting of two square wood blocks connected together with hinges; between the blocks is fixed a brass plate also upon hinges, having in the middle an oval opening large enough to contain a bust portrait. The wood blocks open in the manner of an album, in which the brass plate, as it were, takes the place of the carte, and are, on the outside, perfectly smooth. On the inside of one of the blocks is an oval, in relief, of the exact dimensions of the opening in the metal plate; and on the other block is a corresponding hollow of oval form.

(*c*). A press which can be tightly closed by means of screws. A linen or bookbinder's press will answer the purpose well, if such can be obtained, but I have myself constructed a small wooden press expressly for the process, which answers exceedingly well.

The above is all the apparatus necessary for the production of these portraits. In the first place, some pattern ovals are cut out of thick black paper, using the oval opening in the brass plate and a sharp penknife for the purpose, the cutting operation being effected at one sweep. In this way are obtained masks and small oval mats, which fit precisely into one another, and are, moreover, identical in size with the opening in the metal plate, and the relief and intaglio in the wood blocks. A print from a portrait negative, with graduated background, is then taken out of the pressure-frame, and over it is placed one of the masks, in a position most favourable to the picture; and when the same has thus been centered, the oval mat corresponding to the mask is placed upon the print, and the mask withdrawn. The print is then exposed to the sun under a glass plate, the middle being still covered with the black mat, which must not be allowed to shift from its place, and thus a darkly-tinted, or even black, margin is printed around the oval picture.

The print, in this condition, is then toned, fixed, and washed, and finally sized in gelatine. The latter operation is performed by the aid of some glass plates of the required size, which are carefully cleaned, as if to serve for negatives, and then rubbed over with finely-powdered stone alum (luff stone) by means of a tuft of cotton wool, the superfluous powder being afterwards removed with a soft dusting brush. These plates are coated with a four per cent. normal collodion, and placed to dry in a spot free from dust. When perfectly dry, a quantity of gelatine is dissolved in hot water in a beaker, the solution being of the consistence of the collodion previously employed. This is filtered through a piece of linen into the porcelain bath, which has, in the interim, been warmed by means of the water bath, and should be maintained at an even temperature during the whole period of working.

The prints required to be gelatined are, in the first instance, trimmed to the right size by means of a cutting glass, and are then immersed bodily into the gelatine solution, so as to be fully impregnated with the same. The glass plates coated with collodion are now taken in hand; the prints laid, face downwards, thereon, care being taken that all air-bubbles between the paper and glass are carefully pressed out and removed; afterwards a sheet of stout white paper, somewhat bigger than the print, is cemented to the back of each photograph, a precaution for protecting the pictures in the event of their spontaneously leaving the glass on drying.

The plates are allowed to remain for ten or twelve hours (say over night) in a dry locality, and, at the end of that time, the portraits may be separated from the glass by making an incision of the film all round the paper. The superfluous paper should be trimmed off previously to the pictures being mounted upon cardboard.

After drying, the carte is put through a steel press, and is then placed in the embossing stamp to give it the desired relief.

Many of the manipulations may be slightly modified if desired. For instance, instead of cementing a piece of paper to the back of the prints, the card itself, if not very thick, may be at once attached, and the margins the cof thus gelatined, the process of rolling being in this way obviated. Some photographers add a small quantity of sugar-candy to the gelatine, in order to prevent the sizing solution drying too rapidly, and to render the finished card more plastic and impressionable.

I am in possession of a large collection of these pictures, which appear as brilliant and beautiful as photographic enamels. Almost all of them have been produced by Italian firms, and by far the greater part of them have a deep black border round the oval bust. A few of them betray a tendency to curl up at the edges, but all those which have been produced by the process I have just described have remained quite flat and even. This *modus operandi* is, moreover, to be recommended from the fact of its having been adopted by some of the first firms at Vienna, who have recently turned out some very beautiful results through its agency.

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* *Photographische Correspondenz.*

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ON WASHED AND FUMED PAPER.

BY M. BADEN, OF ALTONA.*

I must confess that it has caused me some amount of pleasure to find a comrade on the other side of the Channel, in the person of Colonel Stuart Wortley, who confirms my experience in regard to the preparation and employment of durable chloride of silver paper; and I would risk the assertion that before long the tedious task of daily sensitizing albuminized paper will be altogether abandoned.

For upwards of twelve months I have worked in my studio exclusively with washed chloride of silver paper, and have during that time never had cause to complain of the tone and vigour of my pictures. It has happened, it is true, that in sensitizing a large batch of paper a portion of the same yielded weak impressions, but the reason of this was the extremely impoverished state of the silver bath at the time of treatment. Since that time I have never allowed the argentometer to sink lower than 12°, and invariably strengthen the bath at every fifth sheet. I have never had recourse to the addition of copper salt to the sensitizing bath, as by that means one is always left in a state of uncertainty as to the strength of one's silver bath. The excess in the amount of silver employed is extremely small, provided that the rinsing waters, which should be four in number, are carefully collected and saved.

My bath is maintained in a neutral condition by means of carbonate of silver, which is always kept in the same bottle. Acid baths give a strong metallic gloss in the shadows, which is difficult to remove, even by thorough washing. When the paper has been floated upon the solution for two or three minutes, it is drawn successively through the four water dishes, and then hung up to dry; the water in the last dish should always remain clear. Prepared in this way, the paper retains its maximum amount of brilliancy. A further cause of weak pictures is the insufficient fuming of the pads (the paper itself not being fumed); for this reason too many pads should not be placed in the ammonia box at one time.

For toning, I proceed as follows:—As much chloride of gold as is obtained from a gold ducat I dissolve in one hundred and twenty ounces of water. An ounce of this solution added to two ounces of saturated borax water suffices to tone five dozen carte-de-visite prints. If the washed chloride paper is allowed to float upon a solution of chloride of gold of 1 : 500 strength, the material will yield prints which do not require toning at all. Transparent negatives will then give prints of a brown tone, while opaque ones will be found to furnish pictures of a blue tint, from the same sheet of paper. The gold bath becomes, of course, weaker as sheet after sheet is treated, and must, therefore, be strengthened from time to time. Exact instructions in this matter I am, however, unable to lay down, not being in a position to experiment much with a salt of this costly nature; but paper prepared in this way possesses the advantage, that from one sheet, thirty carte prints can be produced, all of them of the same tone.

I have been able to keep chloride of silver paper prepared in March until the October following, the same retaining its pristine whiteness, and printing in all respects as well as freshly-prepared albuminized paper. The washed material may, therefore, be termed durable in the fullest sense of the word. It tones very readily, requires but little gold, yields uniform results, and is without appreciable waste.

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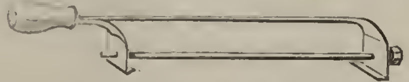
* *Photographisches Archiv.*

A HOLDER FOR DEVELOPMENT AND REDEVELOPMENT.

BY M. CAREY LEA.*

Various forms of holder have been proposed for supporting the plate during its development and redevelopment, where this last is required, in order to save the hands from the silver stains which are apt to be caused. None of those that have come in my way have proved satisfactory. Pneumatic holders are not altogether safe. I have used them both in the form with handle and without, and though they generally held the plate pretty well, especially if the precaution be taken to keep them well wet, still accidents will once in a while happen, and these are very disagreeable. Another form, which I imported from England some years ago, in which the plate was held between two guides, acted upon by a coiled spring, proved altogether useless.

About a year ago, an idea occurred to me, which Mr. Zentmayer carried into execution for me, and which has proved, after very thorough trial, to be free from all objection. The cut will give a clear idea of it. A brass rod, just stout enough to have the necessary stiffness, without being heavy is inserted into a wooden handle, also another similar piece much shorter. Each of these carries an arm about three inches long, the upper part of brass, but the lower half of solid silver. At the bottom this silver piece is bent short at right angles. The two arms are connected by a rod passing through both. In one it simply turns round, in the other hole there is a screw-thread cut, with a corresponding thread on the rod. This last has at its right hand end a mill-head. It is evident that by turning this mill-head the arms are made to approach or separate.



The space between the arms is such as to correspond with the size of the plate most frequently used. A holder can, however, be used for two sizes of plates, taking the larger size by its breadth, and the smaller by its length, as the construction admits of a certain degree of play. Thus, the writer takes a six and a half by eight and a-half plate the long way, and an eight by ten the short way, there being but half an inch difference.

From the form given to this instrument, the plate is secured absolutely. It cannot get out until the screw is loosened, and may be raised to the light in a perpendicular position with absolute safety. Nor have I ever had a film injured or a plate broken by the pressure.

Another advantage of this holder, and in my opinion no small one, is, that if one prefers, as I do, to use a bath if one wishes to redevelop with pyrogallic acid and silver, the plate can be plunged into the redeveloping bath without getting the fingers into the mixture. It can be lifted out any number of times for examination and returned to the bath again, thus completely saving the fingers from the most disagreeable source of staining.

In working the collodio-bromide dry process, this instrument eliminates the principal source of silver stains. In that process the alkaline development gives, in nine cases out of ten, all the density that is needed. But if a material mistake has been made in exposure, or if the development has been stopped by mistake too soon, so that the density is insufficient, in these rare cases a silver redevelopment may become necessary, and then this holder comes into play, and enables one completely to save the fingers.

A firmer grip of the holder is obtained by partly squaring the round handle, which could not be very clearly shown in the figure.

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* *Philadelphia Photographer.*

ALBUMEN COATED PLATES, TUNICARE, ETC.

BY SAMUEL FRY.

If one may judge from letters of correspondents in the News, there must be many of your readers who, however desirous of obtaining the advantages of preliminary coatings, have, from certain causes, been unable to do so. That there is a need for such a coating is generally admitted, for not only are plates successfully treated more brilliant than the best cleaned and polished glass, but there is an immense amount of glass in the market with markings that no cleaning can remove. This is not an individual experience, but one very commonly noticed. I had recently a large supply of the best flatted crown, known as "patent plate substitute," which nothing can clean but nitric acid, and this injures the boy's clothes, and brings his mother to the fore, and is, indeed, a very undesirable agent to employ in any but skilled hands. But an albumen coating makes these plates perfect. The same with old plates. I had a stock of duplicate plates and others taken years ago, which were not wanted; but they could not be successfully used without an albumen coating. But why do many fail to find it answer? I think it is from want of sufficient care in the preparation of the albumen, or from disturbing it before use. I failed until I allowed it to stand some hours in a tall glass measure into which it is filtered, and then poured off the upper half into a two-ounce measure. The best proportion is, albumen one ounce, distilled water five ounces, and carbolic acid sufficient to have the well-known smell in the fluid. Common or rain water is no use, causing inevitable spots. Recently a friend, who had almost given it up, found distilled water made all the difference. Mr. Elbert Anderson seems to use it much thinner, but in my experience the thick fluid given by my proportions covers all imperfections far better. Theoretically, albumen injures the nitrate bath; practically, it is perfectly innocuous. I apply the albumen by pouring a small pool on the plate, and by the edge of the hand guiding it over the plate to within one-eighth edge of the plate.

I have tried Mr. Jones's tunicare, and ascertained why so many fail with it. Everyone knows that albumen is a matter whose molecular condition is very easily disturbed, and the prescribed addition of water before use causes this fatal disturbance. It is also too thin when diluted. I look upon a preliminary coating of albumen as having an importance far beyond the mere giving a clean surface, valuable as that is. It gives, without intensity, a better printing colour to the negative, and also obviates all fear of the film cracking, or leaving the plates, or blistering during development.

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Proceedings of Societies.

South London Photographic Society.

The second meeting for the session was held on the evening of the 10th inst., the Rev. F. F. Statham, M.A., F.G.S., in the chair.

After the reading of the minutes of the previous meeting, the subject for the present evening was announced to be a conversation on the exhibition of photographs now open in Conduit Street.

The Chairman said that every person must be delighted with the large and varied collection of photographs exhibited. The idea of such an exhibition, too, was good, for it afforded photographers from all parts of the world an opportunity of sending to it the productions of their skill; thus all were in the position of comparing, year after year, their own productions with those of others, and of thus testing their progress in the art. At the opening meeting of the exhibition, he (Mr. Statham) had met and conversed with M. Adam-Salomon, who was present on that occasion, and who had told him that he was delighted with the exhibition, and would carry away from it many valuable lessons for which he was scarcely prepared. Now, if such a master in the art as M. Salomon could do so, so would others. Comparison tended to further the progress of art. One man examined the work of another, and resolved to emulate him in those features in which he excelled; besides, ideas reproduced themselves. There was one topic that he might mention. No facility appeared to be offered to exhibitors to dispose of their works. In the Royal Academy the artist has not only the advantage of comparing his works with those of others, but he has the further advantage of being able to dispose of them by sale. If photographers had also an advantage of this kind in such an exhibition as that now under notice, it would, in his opinion, be very desirable. Both the portraits and landscapes were of large size—larger, he thought, than they had previously had. In former exhibitions many of the large pictures were pieced or printed from different negatives; but in this there are faultless pictures of enormous size, and this alone, he thought, was a great stride in advance. With respect to portraiture, many of those exhibited—those of Lieut.-Colonel Stuart Wortley, for example—possessed an amount of artistic perfection which brought them up almost to the painter's art, many of them reminding him of the pictures of Titian and others that he had seen on the continent. He considered Mrs. Cameron's pictures to be far inferior to those of Colonel Wortley. He was much concerned to see that the foreign school was so poorly represented—a circumstance, as they all knew, which was to be attributed to the war. America also was not represented, at least on the night of his visit. With respect to M. Adam-Salomon, some seemed to be treading very closely in his footsteps. The finest examples of this kind of work were by one of their own members, Mr. Blanchard. He considered that an immense improvement had been made in the taking of portraits of infants. Referring to specimens of this class by Mr. Faulkner, he remarked that this artist must either possess very great skill or great tact. He specially directed attention to some *genre* pictures by M. Adam Distin, which were well deserving of the most careful examination. These were designated "Waiting for Change," "The Broken Toe," "The Young Artist," &c. He descanted on the skill with which the accessories had been introduced, how thoroughly natural each picture was, and how completely it told its story. Had these pictures been represented as copies of Wilkie, the public would have estimated them at their real value. The reproductions of subjects of that kind were well worthy of the attention of the photographic artist.

Mr. J. T. Taylor, referring to the fact that the enamels of Camarsac and Henderson were hanging in juxtaposition, considered that it was not a little gratifying, from the means of comparison thus afforded, to ascertain that, as regards that class of work, this country was now much superior to France, assuming, as he did, that Camarsac was the first enamel artist on the continent.

Mr. Foxlee (in reply to the chairman) said he had not had an opportunity of closely examining the pictures.

Mr. Dunmore spoke of the admirable composition of Mrs. Cameron's pictures, and considered that it was matter for regret that the manipulations had been so imperfectly performed.

Mr. Croughton had noticed that the "line" was monopolised, to the extent of one-third of its space, by the works of two or three artists.

A Member said that he had heard much dissatisfaction expressed on account of the large amount of space on the "line" occupied by Colonel Wortley's pictures, to accommodate which other pictures, possessing more minute detail, had to be placed in positions where they could scarcely be examined.

Mr. Brooks considered that that was unjust, not merely to the other exhibitors, but to Colonel Wortley himself; for, at the exhibition of the Royal Cornwall Polytechnic Society, Colonel Wortley's pictures were hung much higher, and looked much better.

With this opinion many of the members present coincided.

Mr. Cocking said the first rapid glance he took of the photographs in the exhibition assured him that the pictorial element was in the ascendant, and at once the mind began to feel more at home in the examination of the advanced development of latent artistic feeling which, year after year, these displays had afforded so convincing and satisfactory a proof. It appeared to him that they had now arrived at that stage of their art-science where, the mechanical effort having been mastered, the higher artistic aspirations had time and opportunity to be thought of, the result being, in his opinion, that they were approaching to, if not actually entering upon, the sacred domain of art itself. Without examining in detail individual productions, which he had as yet had no opportunity of doing, it might, he thought, be asserted that the influence which the great French master exercised upon the English school had resulted in the acquisition of much knowledge of, and a very large amount of freedom in, the use of light and shade. In the present exhibition there were many exceedingly fine examples of this study, and those would be very useful if carefully examined into. Pictorial composition—by which he meant the study of leading lines, either in opposition or harmony—would next be the aim of the art-photographer. His own impression was that, with a few exceptions, this art faculty had not received so much attention as the power of light and shade already alluded to. A peculiar feature in the present exhibition was the amount of bearing with which startling momentary effects of nature had been grappled with. How far these were successful could only be appreciated by those who had had an opportunity of witnessing the reality itself. Looking at such productions, one ought never to lose sight of the peculiar materials and conditions by which it was possible at all to secure the slightest representation, and hence the difficulties to be overcome would rather tend to a better appreciation of the actual results exhibited. It showed the great elastic power of photography, that it attempted both the rigid and the moving object, and, from that aspect, it possessed great promise for the future.

Mr. **Fitch** spoke of some German stereoscopic prints of children that he had recently examined, the natural posing of the figures in which were worthy the emulation of English artists. The accessories, expressions, &c., in these were most natural and pictorial.

After some further remarks by Messrs. Hunter, Dunmore, Croughton, and Brooks, the next business of the evening was proceeded with, which was the nomination of the officers and council for election at the next meeting of the Society. It was announced that at the December meeting a paper would be read on the new patent printing frame of Mr. B. J. Edwards.

It was decided that the annual dinner of the Society should take place on December 17th, in the Cafe Royal, Regent Street.

The meeting then adjourned.

Manchester Photographic Society.

A **meeting** of this Society was held at the Memorial Hall on November 10th, 1870, **Thos. Heywood**, V.P., in the chair.

The minutes of the previous meeting having been read and confirmed, it was resolved "That Rule 13 be inserted in writing in a book to be procured for the purpose, and that each member be required to sign the same as a condition of membership."

Mr. **Hooper** exhibited several positives on paper in printer's ink, taken by Mr. Fisher, of Manchester. The process by which they were produced was not described, but was understood to be analogous to the Lichtdruck. Some of the prints exhibited were varnished, others unvarnished, the former being much brighter and more vigorous than the latter.

Mr. **Kershaw** showed some very interesting photographs illustrating one of the many uses made of photography in the war now raging on the Continent. The subject consisted of the important portions of Paris newspapers, cut out, arranged in columns, and photographed on talc. What would form nine columns of a newspaper was copied on a space about two inches by one inch and a half, and was perfectly legible with a glass of moderate magnifying power. These talc photographs left Paris by balloon post.

Mr. **Coote** exhibited and presented to the Society several photographs of cloud subjects, which were much admired.

Mr. **Mabley** called attention to a resolution which had been passed at a previous meeting, to the effect "that means should be taken to secure the exhibition on the screen, at each meeting, of any transparencies the members might bring for that purpose." He considered this a very valuable means of instructing the members who had not had experience in this branch of photography, and hoped they would support the plan by bringing their results, whether good or bad, for exhibition. He mentioned that a member had offered to furnish a pair of lanterns at a cost to the Society of the material and labour only which would be spent in making them, and trusted that, as they would be ready by next month, the December meeting would be both pleasant and instructive.

Mr. **Coventry** volunteered to read a paper at the next meeting on "Glass Transparencies."

The meeting terminated with a vote of thanks to Mr. Heywood for his services in the chair.

Correspondence.

PIRACY AND COPYRIGHT.

Sir,—I will commence my present letter with a few words respecting the case of Manl *v.* Gass. This case occurred before I took any interest in the matter of copyright, and I quoted from memory. I believe the portraits of the Duke were taken with a pair of lenses and a repeating back, producing four portraits upon one plate. The judge non-suited the plaintiffs because every portrait was an independent work of art. The registration was indefinite, and intended to protect all the portraits. Had the plaintiff registered one particular portrait, and proved that the piracies were copies of that portrait, he would have been entitled to a verdict. At the same time, all the other portraits would have been unprotected, and liable to be copied.

To obtain copyright it is necessary, first, that an original work of art be produced; secondly, that the author thereof registers. When a photographer takes a negative of a landscape, he produces an original work, for which he is entitled to obtain copyright; if he take a second negative, he produces another original work entitled to copyright; and so on, *ad infinitum*. If, on the other hand, he took one negative, and then made other negatives therefrom, he would produce copies, and the registration of the original negative would protect the whole. An artist might from life paint consecutive portraits of a sitter: each work would be an original; or he might paint landscapes from nature all alike, and each picture would be original.

I am by no means antagonistic to copyright. On the contrary, I believe it to be beneficial to both the author and the public. I admit the property of a man in his own ideas to be the most absolute property he can possess until he publish them. The advocates of the common law origin of the right have based their conclusions on the broad principles of right and wrong which, rooted in natural equity, must, they say, govern civilised society. But the abstract rights of individuals must give way to the interest of the public, to whom the existence of a perpetual right would be injurious. Upon the sale of a chattel the whole property therein, and every use thereof, passes to the buyer, unless there be an express condition to the contrary. Generally, a publication or work of art is sold without any express condition that the purchaser shall not produce copies of it, and in the absence of that condition the law will not imply it. It is, therefore, manifest that copyright after publication exists only by virtue of the statute, and by it the legislature has eclined to recognise a perpetual monopoly, and only grants and dxclusive right to the author for a term of years, and then only upon certain conditions.

For a long time I was accustomed to see reports in the newspapers respecting infringement of copyright, and I never doubted the legality of the magisterial decisions thereon. One day, calling on a friend, he informed me that a dealer in photographs, with whom he was acquainted, had been summoned to Guildhall to answer fourteen summonses for infringement of copyright. Upon examining the summonses, I found that four were for infringement of copyright, and ten for selling photographs having thereon the name of a person who did not make or execute such photographs. The seventh section of the Act says: "No person shall fraudulently sell, publish, exhibit, or dispose of, or offer for sale, exhibition, or distribution, any painting, drawing, or photograph, or negative of a photograph, having thereon the name, initials, or monogram of a person who did not make or execute such work. This section is intended to protect purchasers of works of art from having spurious works sold to them as the genuine productions of the authors whose names they fraudulently bear. Upon going to the Guildhall the following morning with the defendant and his solicitor, I found that the case would not be heard before the sitting magistrate in the ordinary course, but in an adjoining law court before Sir R. Carden, who sat for the special purpose, and who had during the previous fortnight fined two other dealers, one in the sum of £250, and the other £130. The four summonses were for infringement of the copyrights of "Ordered on Foreign Service" and "My Second Sermon." As I had not had sufficient time to enquire into the soundness of these copyrights, although I some time afterwards discovered that copyright had never been acquired, no objection of any weight could be made to them. The other ten summonses were for selling photographs of the following subjects:—"The Order of Release," "His Only Pair," "The Stag at Bay," "The Blind Beggar," "The Black Brunswicker," and "The First Step," having thereon the name of a person who did not execute or make such photographs. The photographs had been taken from engravings having upon them the name of Mr. Graves as publisher, printed close to the lower edge of the engravings. The name appeared upon the negatives and upon the photographs printed therefrom, and in that state the photographs were sold to the prosecutor's agent. Had the photographs been trimmed close, the name would not have appeared. How can it be maintained with any show of reason or justice that the defendant did *fraudulently* cause Mr. Graves's name to be affixed to the photographs for the purpose of inducing purchasers to believe that the photographs were the genuine productions of Mr. Graves? Unless that intention was in the mind of the defendant there was no offence. The very essence of a criminal offence is in the intention. Mr. Graves's name appeared upon the photographs because, by Mr. Graves's order, it appeared upon the engravings.

Suppose a photographer were to issue a photograph of the last page of the *Times* newspaper, the name of the printer of the paper would appear thereon: would it not be absurd to summon the seller of the photograph for selling a work having thereon the name of a person who did not make such photograph? Yet the two cases are parallel. Sir R. Carden decided the case upon a literal interpretation of the Act. I do not know how he became satisfied that there was a *fraudulent* intention. It should be remembered that this question is in no way connected with copyright. Indeed, these amongst the ten subjects into whose history I have had to enquire are without copyright, as I shall prove upon a future occasion. In two of them, "The Stag at Bay" and the "Black Brunswicker," the complainant had no interest whatever. The plate of "The Stag at Bay" was sold by him many years ago, and has since changed hands several times. At one time it was the property of Mr. Jerrard, of Fleet Street, whose name and date it bore. It then passed to the possession of Mr. Revell, of Leadenhall Street. The last time it came under my notice was at an auction, when it was knocked down to a dealer in the neighbourhood of Whitechapel, who has had its faded beauties restored, a new date engraved, and from whom, as the new publisher, lovers of the fine arts may now obtain *beautiful* artists' proofs, equal, in the estimation of the seller, to those produced twenty years ago. Thus, like the high-mettled racer, which at last concludes its labours in drawing a sand cart, the aristocratic plate which at one time was the glory of Pall Mall, is finally carted off to Whitechapel, there to be worked while a decent impression can be obtained to delight the buyers of cheap art, and to annoy those who, in former years, foolishly paid guineas for impressions which in the present day are worth not so many shillings. The engraving of "The Black Brunswicker," when first published, had thereon the names of H. Graves, Messrs. Moore and Macqueen, and Francis Delarue as the publishers, and an entry was made in the register upon the 17th March, 1865, which purported that by an agreement made February 7th, 1863, the copyright of the painting was sold by the author to H. Graves and Messrs. Moore and Macqueen. But, unfortunately for this entry, there is a little discrepancy which it will be difficult to explain. The artist's proofs were published on the 4th February, 1863; how, then, could the copyright be sold by the author three days afterwards? The publication line upon the plate was afterwards altered to August 4th, 1864, by which act whatever copyright the engraving might have had was destroyed. When Moore and Macqueen (limited) fell into difficulties, the plate was sold by order of their trustees, and ultimately followed "The Stag at Bay" to Whitechapel, where it received another date and also the name of a new publisher. Upon the fourteen summonses the defendant paid £70, and the complainant afterwards brought actions at law upon the same cases, to compromise which the defendant paid a further sum of £15. Including his own expenses, the defendant's loss amounted to £90 for selling fourteen photographs. I may here remark that it is contrary to English notions of justice that a magistrate should determine a case when one of the suitors before him happens to be his own personal friend. I have seen a magistrate shake hands with a friend, and then take his seat upon the bench to hear a case in which that friend was the complainant. Holding the same opinion as Lord Coke, that the most oppressive act of injustice is that done under the colour of the law, I determined to make an enquiry into the law of artistic copyright, and to use whatever knowledge I might thereby acquire for the benefit of those unfortunate persons who might happen to be brought within its operation. With what result will appear in future letters.—I am, sir, your obedient servant, J. Cunnington.

London, November 8th, 1870.

COPYRIGHT CONVICTION.—BROOKS *VERSUS* KNIGHT.

Sir,—Only this day has my attention been called to the many letters (in the Photographic News) during the last four weeks, relative to the above conviction, and, in justice to a publisher, I feel sure you will insert this letter, and allow me to place myself in the proper light before your readers. As one of the largest engraving publishers, I have during the last twenty years expended in copyrights and engravings upwards of £40,000. The facts are these. My assistant, R. Cope, passing the door of the defendant, saw in his window a pirated copy of "The Reaper," after T. Faed, R.A., in size a three-quarter plate, which I never issued in my life, for the copyright of which I gave a hundred guineas, and the engraving three hundred guineas, and two years' labour. He asked the price. "Six shillings," was the reply. The money was paid, and the next morning the copy was brought into my office, and I was told the defendant would supply any subject required. I at once sent for several of my latest works, and the defendant said he had got the engravings, and the photographs Cope required should be printed and ready in a week. They were fetched, and ten shillings paid for four copies, which would cost about two shillings, so eight shillings was the defendant's nett profit (a profit worth a little risk without outlay of capital). My man was not an "informer," nor did he go to "trap" the defendant. Cope went in a pure business way, and asked for these very subjects, and bought them in a legitimate manner. I never used in my life any "trap." More than a year ago I summoned the defendant for piracy, and let him off, and withdrew the summons on his promise never to offend again, he paying the expenses. I have had it in my power to convict hundreds, but not in any case have I pressed a single infringement when I saw the offender was penitent. In pirating my copyrights there is no excuse, for I have met the demand so long required by the public by issuing the whole of my subjects at eight shillings per dozen, wholesale. Yet even at this low price they still pirate them, and begrudge me the small profit on my enormous outlay. As to the slips produced in court, *said* to be cut off my own photographs (which, by-the-bye, did not fit). it is a common practice by vendors of copies to print a thousand, same size and tone as mine are, place them on a board, and put one genuine stamped copy of mine on the top, and, with a piece of zinc or glass and a sharp knife, cut a wavey line, and keep the top genuine photograph with my stamp on in a pocket-book; and if ever a pirated copy did crop up, they had this genuine bit, with my stamp on, that would fit the *whole thousand* spurious copies. After this explanation no magistrate could have decided otherwise. For what purpose were these stamps cut off these four, except for fraud? If their intention was to trap me, why did they not leave the stamp on, as a mount covered all? The learned magistrate saw through the thing at once, and did not believe either of the defendant's witnesses on their oaths. Every case that has been appealed against by pirates has gone against them. We have right, both morally and legally; juries, judges, and magistrates see it. These copyists dispute every copyright. My relative, Mr. T. Brooks, the eminent artist, I commissioned to paint me three pictures, "Grace Darling," "Launch of the Life Boat," and "Saved from the Wreck," which, with the engravings, cost me over four thousand pounds, and I issue these very new subjects at eight shillings per dozen, wholesale. Now how many millions must I sell before I recoup myself?

You can understand the warm interest your correspondent, Mr. Cunnington, has in advocating the cause of these vendors of copies. He is a photographer; and unless he can shake the validity of a copyright, his trade is gone. As to his arguments of this and that being legal, he has only to look back the last few years, and see the opinions and convictions of judges, juries, and magistrates; and surely these learned men can expound the Copyright Act quite as well as any layman, however kind and disinterested.

The defendant was waited upon, soon after I withdrew the first summons, by my manager, when Knight made the following remarks:—"Brooks and Graves be hanged! Copyright, indeed! There is not such a thing; they are all my copyrights. I have as much right to them as anybody. I have got £200 in the bank, and we can raise £300 more if required. These publishers may bark, but they won't bite. I set them at defiance, and their copyrights too."

The way printers of photographs carry on their business is this: they keep on printing, getting men of straw to turn them into cash, keeping to all popular subjects under the old Engraving Act published prior to 1862, which only gives a publisher the chance of "suing a beggar," &c. I will only quote one instance. I gave £1,100 for Millais's celebrated subject (steel plate copyright), "The Huguenot," and as this was published prior to 1862, I must take it into the superior courts, and be mulcted in several hundred pounds costs. Such is the unsatisfactory state of the Act 8. George II., and these copyists know all the wrinkles; they all assist each other with every scrap of information they pick up, and if, by a fluke, they can shake the validity of any copyright, thousands are on to it, printing it in all sizes—bad, good, and indifferent; and in about a month, however popular it is, they disgust the public, till they won't have them at a gift.

Now if Knight would sell one piracy, he would sell five; and he admitted one out of the five he was convicted on was a pirated one (exclusive of the one a year ago); but had it not been a different size, no doubt it, too, would have been trimmed, and stamp cut off, and Mr. Cunnington, when giving his evidence for the defence, objected, on cross-examination, to reply to questions put to him, and fenced in such a manner as to call from the bench the following remarks:—"He [the magistrate] considered the case proved, and the defendant's conduct disgraceful. Cunnington also had very nearly laid himself open to a charge of conspiracy with the defendant, and he advised him to take great care what he was doing, or he might very shortly find himself placed in a similar position to the defendant, who, he considered, had in a measure been led away by Cunnington." Now, after these remarks, need I say any more?

As regards your anonymous correspondent "T. B.," of 42, Grafton Street, Dublin (No. 634), who happened to drop in at the Worship Street Police Court when the case was on, no doubt he feels annoyed at having to pay me eightpence for a photograph which he could produce for fourpence if I allowed my right to be infringed with impunity, which I can assure him and every one else from this date, I will not allow. As to "T. B.'s" remarks about "the magistrate stopping the defendant's solicitor," he had me in the witness box, under cross-examination, over an hour; and the whole case occupied between two and three hours, which might have been got through in half an hour.

I have endeavoured, by every means in my power, to conform to the various Copyright Acts. For years I have been in undisputed possession of my copyrights, but now a lot of unprincipled persons start up, and contend that what I have paid so dearly for is not my property, "but theirs." They like free trade; but I call it free booty. All do not speak so unkindly of me as Knight and Cunnington do: refer to your No. 633 in J. Milton's letter on H. Evans, the vendor of piracies, who is now suffering two years' imprisonment; he says: "As regards Mr. Brooks, I consider it a duty hereby to thank that gentleman publicly, on behalf of H. Evans, for the forbearance and sympathy shown to him," &c. My motto through life has been, "To err is human; to forgive divine."

Touching the validity of my copyrights, I shall not follow your correspondents into a labyrinth of their technical objections, as they have had practical demonstrations on that score. I shall merely observe, *en passant*, that the one subject they throw a doubt upon—the "Reaper"—was painted in 1863, and was in court as evidence of the fact; and it bore the autograph, "T. Faed, 1863." Was not this evidence enough? As to whether it was painted after the passing of the 1862 Act, did they require the artist dragging into a police court, as is their wont, and putting publishers to enormous expenses for costs which cannot be enforced? The original picture was taken, in 1863, direct to Mr. Spencer, and a negative was taken *from it*, and by this, the *first* and original photograph, Mr. Spencer became the author thereof, and as such it was registered at Stationer's Hall—"Original Photograph from Oil Painting;" this was in addition to the registration of the painting. It was decided in the case of Brooks *v.* Golding, where the painting was not registered; and in 1863 the first photograph was taken from the picture, and registered as an original photograph, and the judge ruled: "What is it he has to be the author of? He is to be the author of an original painting, drawing, or photograph; and one or the other it must be. If that be so, I maintain that any person who makes a photograph for the first time from an original picture, although the picture was not registered, is the author thereof."

I shall not be led into a paper war by future letters of your correspondents. I have given you the plain facts of the case. I am, yours respectfully, B. Brooks.

17, *Great Portland Street*, *November* 14*th*, 1870.

Talk in the Studio.

Stealing a Photograph.—At the recent Middlesex sessions Cornelius Paley, 30, was charged with stealing a picture frame and a pane of glass, value 7s., the property of Mr. Hunt, photographer, of 81, Lupus Street, Pimlico. Mr. Brindley prosecuted; Mr. F. Mead defended. Squire White, detective, B division, said that on the 17th of October he went to the house of the prisoner, 5, Coburg Row, Westminster, and on his opening the door, asked him if he had had a picture brought there on Saturday night or since. The prisoner denied all knowledge of it. Witness then described the frame, and proceeded to search the rooms. William Watts, detective, B division, who was with the last witness, said that he assisted in the search, and found the picture frame and glass produced behind a large picture. The prisoner's wife said that that was the frame in which she had had the picture of "Red Riding Hood." Mr. Hunt, photographer, 81, Lupus Street, identified the frame as his property, and said that on the Saturday previous he missed it, and a painting which was in it, from the passage of his house, where it was hanging. The jury found the prisoner guilty. Sentence postponed.

"Shoemakers and Photographers."—A German surgeon in the camp before Thionville finds in photography and shoemaking some mysterious affinity or contrast, we cannot say which. He says, speaking of the inhabitants before the investment was complete:—"They were very good-natured, for they allowed small things in the way of refreshments, such as seltzer water, wine, sugar, &c., to come out to us, for which we thanked the Commandant. Even shoemakers and photographers were sent out to us two days." Even shoemakers and photographers! Surely this was the height of luxury!

Indecent Stereographs.—At the Thames Police Court, Richard Jeffries, grainer and painter, was charged before Mr. Lushington with exposing to show indecent stereoscopic photographs in a public thoroughfare. The prisoner was exhibiting a great number of vulgar stereoscopic slides to boys and girls at the corner of Philpot Street, Commercial Road. A lady, who was passing, indignantly expressed her disgust and reprehension of such a demoralizing exhibition, and called on George Smith, a detective officer, to interfere. He immediately responded to the appeal, and seized the prisoner's infamous stock in trade, and took him into custody. Smith produced thirty stereoscopic slides, very badly coloured, of a wretched description. The prisoner, in defence, said two magistrates of other courts had decided the photographs were not indecent. Mr. Lushington said he should decide for himself. He condemned the whole of the rubbish, and fined the defendant 40s., which he paid. Inspector Gee, of the R division, was directed to burn the photographs.

Photography and Royalty.—We learn from the *Dispatch* that Lady Burgoyne has received from the Empress of the French a costly gold locket, in which her majesty's photograph is to be enclosed, as a souvenir of her memorable voyage to England in Sir John Burgoyne's yacht the *Gazelle*, from which she landed at Ryde.

Production of Iodine and Bromine.—W. H. Chandler, in a contemporary, after referring at length to the various sources from which the two haloids alluded to are derived, mentions a few instances of the quantity of the elements above named present in some of the waters of saline springs in the United States, where iodine and bromine were first discovered in 1830—the former body in the Saratoga spring-waters, and the latter in the salines of Onondaga. The quantity of bromine in the Saratoga spring-waters, as determined by Prof. Chandler, reaches 3·63 grammes per gallon; in a brine of the Saginau valley Dr. Chilton found 7·41 grammes of bromine; while in Tarentum, Pa., 4 grammes of bromine and 4 grammes of iodine were reported by M. Hiern. Bromine is, we learn further from this paper, manufactured in the United States in considerable quantity: that for the current year will amount to 175,000 lbs. Iodine is not at present manufactured in the States, the supply being obtained from Europe, where its manufacture is confined to Great Britain and France; the annual production of these countries amounts to 200,000 lbs. The average product of iodine is 10 lbs. to the ton of kelp; and since it requires 20 tons of wet seaweed to produce 1 ton of kelp, this total represents 400,000 tons of seaweed. At the present price, the iodine produced is of more value than the alkaline salts. The chief consumption of bromine and iodine is for medicinal purposes in the form of salts; a small proportion is consumed in photography. Bromine has been employed as a discharger in calico-printing, and was, to a limited extent, used as a disinfectant during the late American war.—*Chemical News.*

The Exhibition.—We perceive that the *South London Press* of last week gave a critical notice of the works of photographers residing in South London included in the photographic exhibition. This is the first time, we believe, that the London local press has taken into account the claims of the photographic art; and it may be taken as an evidence of the increasing faith in photography as an art—a faith justified, certainly, by the vast strides those practising it have taken onwards of recent years. We need hardly add that the *South London Press* is the great representative journal of the South of London. We quote its remarks on another page.

◆

To Correspondents.

N. Smith.—Some of Mr. Blanchard's prints at the exhibition are from untouched negatives; some are from negatives which have been touched a little, but none have been elaborately worked-up. We believe that Mr. Blanchard aims at getting good results with as little touching as possible on the negative, but he would not neglect any amount of touching which would really improve the pictorial qualities, without destroying the truth of nature.

J. T.—The proposed alteration in your studio will give good results, and the north of the roof will be sufficient for the back [illegible]; blinds, or, rather, [illegible] will be required as a [illegible], and will effect this end. 2. The paper enclosed will do for the wash. It is much a question of taste as to whether you use white [illegible] in Dallmeyer or [illegible]. The latter answer very well. With the proposed [illegible], it will be wise to adhere to the use of the [illegible] from Dallmeyer.

J. B. M.—As a rule, the lenses of the best English makers are so uniform in excellence that you may rely on them without previous trial. Second-hand ones are, as a rule, quite trustworthy.

A Subscriber for Years.—You cannot do better than follow the formula given in our Year-Book. The same is as follows:—

Good pyroxyline	4 to 6 grains
Iodide of ammonium	2½ ,,
Iodide of cadmium	2 ,,
Bromide of cadmium	1 to 2 ,,
Ether and alcohol, mixed in equal parts	1 ounce

To keep a plate sensitive for an hour you may either use a preservative like honey, or you may wash the plate in distilled water; or you may expose it in the ordinary way, taking care not to use a hurry and repellent [illegible], and to place wet blotting-paper at the back. If you expose the plate without preservative or washing, do not allow it to remain in the bath so long as usual.

H. A.—Much depends on the mounting material used as to the best mode of unmounting a print. The simplest plan is to take a piece of damp blotting-paper, soak it in water, and place it over the print. As a rule, when the moisture has penetrated the print, the latter can be lifted from the mount without difficulty. If this method fail, try immersing the mounted print in warm water. In the latter case great care is necessary, as the print becomes tender, and is apt to tear. 2. It is quite possible, indeed probable, that the collodio-chloride image might be intensified satisfactorily with [illegible], but we have not tried it.

A Subscriber from the First.—A licence is necessary to enable you to practise the heliotype process. Apply to Messrs. Edwards and Kidd, 13, Henrietta Street, Covent Garden.

C. B. Birmingham.—Thanks; we will use the hint you send.

L.—A few seconds generally suffice to impress a good image of the moon, and sometimes of the bright edges of clouds which it illumines. To obtain a fair image of any object illuminated by the moon would generally require at least half an hour.

N. N. N.—We published, a few months ago, Lewis Waterhouse's description of the method of printing maps for the German Government employed in the Royal Printing Office at Berlin. It is a photographic engraving process. Occasionally Mr. Appel's anastatic process is employed in the office, but the correspondent in question, not perfectly understanding the matter, was confounding it with the photo-engraving process.

A. J. Foster.—Thanks.—The plan is simple and ingenious. If you will permit us, we will reserve the description for insertion in our forthcoming Year-Book.

H. C.—The exhibition will be open every day (Sunday excepted) during the month after next, but we should recommend you, for the purpose of seeing the pictures, to visit the exhibition before that, as the last day or so the pictures may possibly be removed. 2. There is a softness and delicacy about most of the prints on albumenised paper, and we believe that the collodio-chloride has an advantage in permanence. The reason that it is not more commonly adopted is, that it requires more trouble. Good albumenised paper can be bought ready prepared, and it is easily sensitized and manipulated. Collodio-chloride, as a rule, requires to be prepared by the photographer, and involves care and trouble. The easiest processes are generally the most popular.

C. W. H.—The process of printing maps in the Royal Printing Office at Berlin, described a few months ago in our pages by Lewis Waterhouse, is a photo-engraving process. If you wish to obtain a copy of an engraving without photographing it, you may employ the anastatic process. The details are too lengthy to be described in this column, even if it were more essentially a matter of photographic interest than it is.

A Perplexed.—We have had no experience with Mr. Carey Lea's modification of the collodio-bromide process, and cannot, therefore, speak with authority as to the causes of failure; but if you have used the formula as you state it, it appears to us that the proportion of nitrate of silver is much too small.

W. O. C.—We cannot account for the failure of the platinum solution to give any deposit on your negative. Did you wash the film well after fixing before applying the solution? Did you give it time enough? It is sometimes a good plan to place the plate in a dish containing the solution. 2. You will obtain admission to the Photographic Exhibition on any day but Saturday on signing your name in the visitor's book. All visitors are admitted on Saturday without exception. The object of [illegible] was not to exclude outsiders, but to afford easy means of securing invitations. You will find that we have already explained this.

Cyrus.—With the information you have given we may be able to find the print. We will endeavour to do so.

G. C.—The ideal condition of a collodion suitable for intensifying is the use of a cotton made at a high temperature, and with weak acids, so as to get a somewhat powdery structureless film. It is important also to use fairly rectified solvents, as the presence of much water tends to the production of opacity in the film. If you iodize an ordinary good sample of collodion with a little [illegible] of potash, allow it to settle, and then decant, and, if it have any tendency to bluishness, add a little tincture of iodine, you will obtain a good collodion for the purpose.

Anxious.—The author of any picture or photograph is the owner of the copyright, and the photographer of the bas-relief in question would acquire a copyright in the new photograph; but this would be no barrier to the production of other photographs of the statue. The owner may have it photographed, and may acquire a copyright in his photograph. The copyright in each case protects the special photograph from being copied, but does not prevent the original object from being again photographed or copied in any other way.

Electrominster.—The best plan will be to visit the works of the Autotype Company at Ealing, and witness the operations there, where carbon is worked on a large scale with complete success.

Several Correspondents in our next.

⁂ All photographs forwarded to the Publisher for registration receive attention at once; but the pressure on our space sometimes compels us to defer the acknowledgment of their receipt. It should be borne in mind, therefore, that non-acknowledgment at once does not necessarily imply non-receipt or non-registration.

Advertisements and communications for the Publishers should be forwarded to the Photographic News Office, 15, Gough Square, Fleet Street, E.C.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

PAGE
The Exhibition of Photographs 553
Surface Texture in Photographs 554
Sensitive Tests for Hyposulphite of Soda 554
Foreign Miscellanea 555
American Correspondence 555
Suggestions for a Negative Paper Process. By Wm. Blair 556
A Simple and Efficient Still. By Frederick Dresser 557
PAGE
The Exhibition and the Press 557
On Heliotypy as a Means of Producing Works of Art 559
Correspondence. Retouching in the Exhibition: Detractors—Piracy and Copyright—The Late Alleged Piracy—Piracy and Copyright—Piracy—Reproducing Negatives: Fixing Pencil Drawings 560
Talk in the Studio 563
To Correspondents 564

THE EXHIBITION OF PHOTOGRAPHS.

Landscapes.

The landscape photography at the exhibition now open affords as full and satisfactory evidence of the general advancement as any department represented, and the improvment is as marked in relation to art-feeling as it is in mastery over technical conditions. Whilst it is noteworthy that there are very few examples of dry-plate work, it is not less to be noted that all the results of dry processes exhibited are exceedingly excellent, and, as we have before said, in the half-dozen charming specimens contributed by Mr. R. Manners Gordon, in which five dry processes are represented, it is difficult to say which is best, any of them being equal to the examples by the wet process. In making a selection of the absolutely best out of these six examples, we are compelled to say that we prefer that by the oldest process, the collodio-albumen, which, besides being a charming subject, is one of the most exquisitely delicate bits of rendering of foliage, water, and atmosphere we have ever seen. It is further to be noted that the largest examples of dry-plate work are by the collodio-albumen process, plates of something like twenty inches long, exhibited by W. D. Sanderson, showing no lack of any photographic good quality.

It appears, then, that almost any of the recognized methods of working will yield good results if skilfully and carefully worked, and whilst attention to the relative value of different processes and modes of working must continue a subject of interesting enquiry for some time to come, yet, in estimating progress at an exhibition, it is the results, and these chiefly in relation to their pictorial value, rather than the means, which require examination.

One of the admirable little landscapes hung in a corner, and almost escaping notice, is simply entitled "At Keston, Kent," No. 14, Reuben Mitchell. This is an admirable example of fine pictorial results dependent on treatment rather than the subject. The material here is of the simplest: a cart, some wood or sticks, and an ordinary windmill form the chief objects. But the massing and the arrangement, and especially the effect of a very fine sky with a mass of heavy cloud coming just behind the windmill, combine to produce a most effective little picture Of Mr. Earl's great picture we have before spoken, and need here only add that, fine as we before thought it, we find it improves on acquaintance. Much less in size (apparently on a twelve-inch plate), but in our estimation still more charming as a picture, is "A Welsh Salmon Pool" (46). This is an exceedingly pleasing picture: admirable in composition, full of tone, with a figure effectively placed, this picture pleases us altogether. "Summer Time—the Brook" (41) is another exquisite bit of nature, to which the figures give great value. In the "Woodland Path," a charming picture, a mistake is made: the pheasant manifestly printed-in, is very much too large; in relation to the man it appears big enough for a monstrous turkey. "Worcester Cathedral, West Front" (42), is a very fine large photograph, in which there is much good work; but the excess of empty foreground, and the series of parallel lines of which it consists, sadly mar the pictorial effect, and detract from the grandeur and proportions of the structure. The "Trout Stream," and other landscapes of Mr. Earl, are very good.

We have already expressed our opinion somewhat fully on the landscape contributions of Messrs. Robinson and Cherrill, the wood scenery and the marine views being alike most satisfactory. There are three or four distinct elements of interest in this series, besides their highest characteristic of art excellence. They possess a degree of technical perfection rarely attained in photographs of such large size. Instantaneous sea views on small plates require, for the highest results, the most perfect conditions and the highest skill. Perfect success in such work is so rare that it has conferred on the two or three gentlemen who have attained such success high reputation. But when, instead of stereoscopic work, plates of sixteen inches by twelve are attempted, with the lenses of long focus, and all the necessary concomitants involving difficulty, the triumph of the success is, even as a technical matter, very much greater. And the success here is very complete: there is no under-exposure suggesting moonlight, but, instead, a more perfect air of the clear, pure light of a bright day at the sea-side than we have often seen. There is no effect of wool for waves, indicating movement of the water during sensibly prolonged exposure. The curling crests of waves are crisply made out, with the few detached spurts of spray breaking away from the crests, giving a singular truth and *vraisemblance*. In some cases the indications of eight separate refluxes of the preceding waves, flowing back to meet a thundering breaker, which comes on with resistless swirl, are distinctly made out. In all cases the water is transparent, limpid, and flowing. The skies—some of which are printed from the same negative, and some printed-in—are of singular beauty, perfection, and fitness; the breezy effect of movement, and the luminous effect of bright daylight, in some of them, are exceedingly charming; they are not the conventional photographic clouds—masses of cumuli the most easily secured, and generally most effective; these are chiefly the cirro-cumulus and cirro-stratus, light, delicate, and fleecy, yet well pronounced. All the minor points of technical value—definition, depth, and tone—are also perfect. As containing unusual effects, or *tours du force*, these pictures possess much that is interesting, although some of the effects are doubtless of a character to excite discussion as to their legitimacy. In the "Beached

Margent of the Sea" a flight of sea-gulls is introduced, which, as if to flout the theories of painting on the negative, advanced last year, are here dark or grey against the light sky, and are very effective, whilst just in front of an advanced breaker is another, the white plumage of which is perfectly made out against the dark hollow of the curling wave with the most effective relief. Sceptics will, of course, say that the dodge is very evident, and that the art does not conceal the artifice. In relation to the "First Hour of Night" similar objections will be, and indeed are, made to the moon: to its size, its position, and to its isolated brightness. However obtained, or however legitimate and true, we must confess that it seems to intrude somewhat as a spot into the solemn grandeur of one of the finest seascapes we have seen. The low tone of the grey masses of cumulus cloud, the vastness of the feeling of space, and the tenderness and hushed repose of the whole scene, give the picture a singular charm. Apart from all technical merits and all surprizes, it is the art qualities which will win the commendation of the judicious; and, in this respect, most of the pictures are models of skilful management in composition, chiaroscuro, and sentiment or motive, as well as of truth to nature. Take "Evening on Culverden Down" (67) as a fine example. The quiet, low tone of the evening landscape and general surroundings is relieved by the burst of light from the setting sun behind the clouds. It is the rare quality of fine chiaroscuro in a landscape, that in a monochrome it suggests colour: and it is impossible to look on this sky without feeling the glowing crimson and gold gradually falling into the infinite variety of broken tints which characterize sunset clouds. We might multiply instances, but we have already exhausted our space, and must leave these pictures for the present.

The landscapes of Mr. Stephen Thompson have great technical excellence, and are managed with most artistic taste and feeling. Notwithstanding their charm in nature, few things could be more unpromising for picturesque effect than hop-gardens. The straight poles, surrounded by the climbing plant of green, give even lines and uniform tints of a low tone; but by treatment, and the introduction of figures, Mr. Thompson has redeemed the pictures from the defects of the subject. His architectural subjects are managed with much skill.

Mr. Brownrigg always takes an unusually high position in amateur landscape work, and in the present exhibition he has some very capital pictures. His "Loch Katrine" (85) is delicate and tender in rendering, and full of atmosphere. "On the Clyde" (170) is another very capital photograph of a picturesque scene.

We are glad to be able to announce that during the final days of the Exhibition it will be open in the evenings, when those who have not been able to pay a visit in the daytime will be able to inspect the pictures by gas-light. This will be a great boon to many. We subjoin Mr. Spiller's letter.

The Exhibition Open in the Evenings.

Sir,—Will you kindly permit me to make known, through the medium of your journal, the circumstance that it has been decided, at the request of several influential members of the Photographic Society, to open the Exhibition on the evenings of the last three days, when the members and the public will be admitted without charge. The galleries will, therefore, be open on Monday, Tuesday, and Wednesday next from 9 a.m. till dusk, and again in the evenings from 6 till 9 o'clock. I have only to add that the Exhibition will positively be closed on Wednesday night, the 30th instant.—I am, &c., John Spiller, *Hon Sec.*

9, Conduit Street, W., November 23rd.

SURFACE TEXTURE IN PHOTOGRAPHS.

We have received from our esteemed collaborateur, Mr. E. L. Wilson, some examples of an effect which he describes in his letter on another page. Most of our readers may be presumed to have taken sufficient interest in pictures to be familiar with the effect of rough drawing-paper in a water-colour drawing. A singular transparency and vigour are imparted to the picture by the irregular texture of the paper; it possesses an effect in some degree analogous to that of stippling; a simple wash is broken up into a stipple-like variation of tint by the minute variations of light and shade which the small elevations and depressions of a rough surface inevitably produce, and an effect both of force and delicacy is often imparted to a hasty sketch, which could otherwise have been secured only by minute and high finish.

The effect of the portraits before us, on first examination, is that of photographs on rough drawing-paper, and, for large heads, especially when broadly lighted, the result is very effective. We learn that the effect is produced by rolling in contact with a grained surface, in the same manner as chromo-lithographs are rolled after the colour printings are completed, with the view to get the effect of texture common in water-colour drawings. In some of the examples before us a piece of fine linen has been placed in contact with the print during rolling; but we do not like the result so well as that where the drawing-paper texture has been secured. This in a large head, as we have said, is very effective, and a variety of effects may be tried with advantage. In tinted pictures it is probable that a very satisfactory effect would be produced. Rolling with a piece of rough drawing-paper in contact with the mounted picture will, probably, be found to give the desired result.

The idea is not quite new. It has been twice patented in this country: once by Messrs. Dixey and Smith, of Brighton; and once by Messrs. Southwell Brothers, of Baker Street. Prints on thin paper have also been mounted on coarse canvas, to produce texture in a picture to be finished in oil. Rolling in contact with a matt surface has been practised by Mr. Window with very satisfactory results; but we have not before seen precisely this effect of rough drawing-paper, nor seen a suggestion, that we remember, for its use. New or old, it has never come into vogue, and it is certainly worth attention for certain purposes.

SENSITIVE TESTS FOR HYPOSULPHITE OF SODA.

According to the *Journal fur Chemie*, the most delicate test for hyposulphite of soda is permanganate of potash. Its application is simple and easy, and well adapted, therefore, to the wants of the working photographer. One decigramme of pure permanganate of potash and one gramme of chemically pure carbonate of soda are dissolved in half a litre of water, yielding a transparent rosy-coloured solution. This liquid, on coming in contact with the most minute trace of hyposulphite, loses its red colour, and assumes at once a greenish hue. A finer test than this, probably, does not exist.

Licht enumerates other tests for hyposulphite, which are more or less practical in their nature, but are, nevertheless, well worthy of record.

1. The test based upon the blackening of sugar of lead paper by means of hydrogen, produced by the action of pure sulphuric acid upon pure zinc, when the fluid in the gas-generating vessel contains hyposulphite of soda.

2. The galvanic test, in which pure silver foil, under the influence of an electric current, becomes of a yellow or brownish colour in the presence of hyposulphite of soda.

3. Grune's test, where a collodion film, rendered of a whitish colour by the application of chloride of mercury, fulfils the duty of reagent, and assumes a greyish tone when affected by hyposulphite of soda.

4. The very precise test afforded by the use of blue iodide of starch, which bleaches readily when hyposulphite in minute quantity is mixed therewith.

It is probably only the first and last of these tests that will be found practical in photographic operations; they are both very trustworthy ones, and require but little knowledge or skill in their application.

Foreign Miscellanea.

The Vienna Photographic Society has, through the medium of its Secretary (M. Ludwig Schrank), promised its assistance in the present and future London exhibitions. As there was not sufficient time, on the present occasion, to make a collection of pictures from the principal Viennese studios to represent Austrian photography, M. Schrank has kindly forwarded the *Wander Album* of the Society for exhibition in London, and this, on its arrival, will be forthwith sent to the rooms in Conduit Street. MM. Ohm and Grossman have advised the dispatch of some Lichtdruck specimens, but it is feared that the derangement of the postal service will delay their arrival.

Some dissatisfaction appears to prevail among Berlin photographers as to the treatment of the operators who have been ordered to the war by the Prussian Government. In the first instance, Dr. Stolze (the president of the Berlin Society for the Advancement of Photography) and M. Kardaetz, were requested to organize an expedition; but, inasmuch as the terms of service were severe, and the staff—notwithstanding the dangerous nature of their duties—were not to enjoy the rights and privileges of soldiers, these gentlemen withdrew themselves from the affair. No prospect of a pension or indemnity for wounds was open for photographers, who were required, it appears, to proceed entirely upon their own responsibility. Subsequently, M. Schwier (Dr. Vogel's assistant at the Royal Industrial College) and M. Quidde were prevailed upon to undertake the service.

The German photographers who have been obliged to leave Paris have been well received by their Berlin brethren. Some have been provided with funds to enable them to return to their homes, and others will be placed in situations as soon as possible.

The new Carte Format, or Victoria card, is being adopted in Berlin. Already M. Carl Suck, one of the principal photographers in that city, has commenced their production, charging the sum of fifteen shillings per dozen, and nine shillings the half-dozen. He deprecates the taking of large heads or busts upon cards of this description, as, thereby, the trade will be spoilt for pictures of a larger description. M. Suck points out many peculiar advantages which portraits of this size enjoy, and which will be sufficient to ensure its popularity.

The Berlin journals refer to the recent case of Henry Evans, who was committed in London for selling indecent photographs, and express a hope that a similar course will not be pursued by the police in Germany, where photographs of a similar nature (executed for scientific and artistic purposes) are ofttimes produced.

According to several of the larger photographic firms in Vienna, the average hours of work and pay in the Austrian studios are as follow:—In summer the working hours are from eight in the morning to six in the evening, pauses for rest and refreshment being allowed. In winter the time is shortened by a couple of hours. On Sundays and fete days some work is generally done during the morning. Operators and retouchers receive from one hundred to two hundred florins per month, provided the latter are recognized artists; otherwise, retouchers have from fifteen to eighteen florins per week. Mounters, eight florins to twelve florins; ladies in the reception room, or as printers, forty florins per month. A florin is a little less than two shillings.

The Vienna Society reports that the Voigtlander prize for the best dry-plate process has not been awarded, inasmuch as no candidates have come forward to establish a claim thereto. It was, however, decided that three silver medals should be awarded to those gentlemen who have brought forward the most valuable communications during the present year; and, eventually, the following were cited as those most deserving the honour: M. Fink, Dr. Van Monckhoven, and M. Haack.

M. Camuzet recommends the employment of soluble glass for coating prints which are afterwards to be retouched or coloured. The soluble glass is diluted with water, the solution containing, indeed, but one or one and a-half per cent. of the glass. The liquid is applied to the print, which is then washed or blotted off with filter paper, so as to remove any superfluous quantity. If aniline colours are to be used it is necessary to mix a little acetate of ammonia to the solution, but otherwise this is not required. Soluble glass may also be mixed with the developer with good effect, imparting to it the qualities of an organo-iron developer; but, unfortunately, the compound can only be kept a fortnight or so, as, at the end of that time, a precipitate of silica is thrown down. The following is the formula for the developer:—

Sulphate of iron ...	10 grains
Water	250 cubic centimetres
Soluble glass (fluid) ...	3 ,, ,,
Acetic acid	6 ,, ,,

M. Goltsch has published in *Licht* a communication on the direction of the axis of the eyes in the stereoscope.

M. Georgi recommends the employment of alcohol instead of water for cleaning faded Daguerreotype pictures. Alcohol is not only better calculated to remove stains or spots, but is also stated to be a much safer vehicle to use than water.

Dr. J. Schnauss says a few words in the *Archiv* on the subject of accelerating, or rather invigorating, the effect of the optical image upon the sensitive plate in the camera, by allowing red or non-actinic rays to act upon the film for a short period. Dr. Schnauss observes: "This experiment I have instituted. A double picture was obtained on one plate, half of which was submitted for a few seconds to diffused daylight under a red glass, and the whole was then developed. Not the slightest difference was to be observed between the two pictures, and the same would be the result if the red rays were allowed to enter directly into the camera."

The Russian Government is giving its attention to the application of photography to military matters, employing the art with some success in the Government Printing Office. Some heliographs from this Department, recently exhibited at the St. Petersburg photographic exhibition, are said to have been particularly creditable.

Fears are being entertained by photographers that the supply of photographic papers will be considerably influenced if the Franco-German war continues much longer.

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AMERICAN CORRESPONDENCE.

Ammonio-Sulphate of Iron as a Developer—Concave Backgrounds—Award to Robinson and Cherrill—The Conduit Street Exhibition—A New Effect.

Ammonio-Sulphate of Iron as a Developer.—Permit me to raise my voice once more in behalf of this excellent developer. I know a great many have tried it only to condemn it, but it has advantages which can scarcely be overstated. I think it is a common mistake among photographers to aspire to performing their manipulations too rapidly, and in no case is such a desire more baneful in its results than in the development of the plate. As a general thing it is absolutely wrong, but I only mention this to explain why, probably, the developer I have named is not in popular use; namely, because it is slower in its action than the ordinary iron developer, and is, therefore, supposed to be disadvantageous.

For some classes of subjects—such as general landscape work, groups out of doors, subjects where the details are very fine and minute—it has no equal. It works rather slow, as I have said, but uniform, with very little tendency to fog, even when allowed to remain upon the plate a length of time that would prove fatal to the image developed by the ordinary iron developer. The principal advantages are the softness of the negative, and freedom from harsh, chalky high lights. As an illustration of this fact I send you a dozen prints from negatives made by my amateur friend, J. C. Browne, Esq., president of the Photographic Society of Philadelphia. The subjects, as you will see, are selections from a large collection of curiosities, such as corals, shells, sponges, sea-weeds, embroideries, images, worsted-work, and so on, which are very difficult subjects for the camera, and a severe test for any developer; yet you will observe that the results are most exquisite in every way, and all one could possibly desire. A harsh white spot will scarcely be found in the whole dozen prints.

Now, as your readers may be disposed to give this excellent means of obtaining such results one more trial, I will state what are found to be the best proportions to use, and how to mix them:—Make a saturated solution of ammonio-sulphate of iron in water, filter, and to every ounce of solution add one drachm of glacial acetic acid. This is a stock-bottle, and by making six or eight ounces it will be sufficient for a large number of plates, and has the advantage of keeping any length of time in good condition. Before developing a plate it is necessary to reduce the strength of the saturated solution. Take a small wide-mouthed bottle, and to every five drachms of water add two drachms of the stock solution. The developer is now ready for use. Time may be saved by marking with a file or diamond upon the bottle the exact amount of water desired, and another mark for the iron solution. The proportion of five to two is the formula generally preferred, but it can be readily altered to suit the subject by increasing or decreasing the amount of iron. When the bath is new no difficulty will be experienced in flowing the developer evenly over the plate, but by constant use, alcohol and ether being absorbed into it, the developer may require the addition of a little alcohol to make the solution run perfectly even. After standing for some hours a crystallization will take place in the bottom of the bottle, but that is to be expected, and will do no harm to the solution.

Negatives developed by this double salt are peculiarly suited for making glass positives for the magic lantern, also for solar enlargement. Indeed, for every purpose (except instantaneous photography), perfect satisfaction has been given. The concentrated character of this developer makes it well suited for out-door work, where every pound of additional weight is to be avoided by the operator. It is, of course, necessary to use as pure water as can be readily found for diluting the strength of the developer. Water containing chlorides in considerable proportions must be avoided. The time of exposure requires to be rather longer when this developer is used, and that is scarcely a disadvantage generally.

Concave Backgrounds.—Referring to the subject in anticipation of more details of M. Adam-Salomon's background, I may remark that with us concave backgrounds are not new, and were in use here quite fifteen years ago. A gentleman named Weeks constructed such an one, and furnished the trade with a model, for a price, with directions for making the same. I will hunt up further details on the subject, and if they are worthy I will communicate them to you. There can be no doubt of the many advantages of such a background, and we are indebted to M. Salomon for reviving it. I look with impatience for further remarks from him concerning it.

Award to Robinson and Cherrill.—A few months ago the publishers of the *Philadelphia Photographer* offered four gold medals for the best examples of (1) plain work, (2) composition, (3) landscape, (4) portrait from retouched negatives. Although some creditable things were entered in competition, the palm was carried off by Messrs. Robinson and Cherrill, of Tunbridge Wells, for a very pretty little cabinet picture called "Returning from the Well." Their work is too well-known to you and to your readers to need commendation here, and I am glad to see it beginning to be appreciated in America. American photographers, although I think they equal the best in the world in plain portraiture, are behind in the composition or *genre* line. Messrs. Robinson and Cherrill's picture is to be used in a few months as the embellishment in the *Philadelphia Photographer*, and thus a very excellent model will be given American photographers to work up to. This branch of our art needs development in all directions, for there is no reason why the photographer should not produce pictures as well as portraits.

The Conduit Street Exhibition will be, I expect, in full blast before this reaches you; and how much I should like to be present with you all! What a wonderful influence it will work if your photographers will only be enterprizing enough to attend it, and open their minds and their eyes to receive its lessons. You have clearly stated the advantages of such exhibitions in a late issue of the News, and I hope what you have said so truthfully will be given heed to in earnest. I look for the catalogue of good things to be seen there with much interest. I only wish that when your people are done with all the pictures they could be transferred in a body to America, to our next annual exhibition, which we are already preparing for. We very much want to see more of your work, and although it is a little premature to say it yet, I will say that the executive committee of the National Photographic Association are completing arrangements which will make it a matter of but trifling expense to such of the fraternity abroad as will send pictures for exhibition. I shall be prepared to give the arrangements privately to such as will address me, as soon as their communications can reach me after this. Pictures will be admitted free of duty, and there will also be a compromise on freights decidedly advantageous. I hope a goodly number of English photographers will make it a point to join in our exhibition, and send their pictures early. Another year I hope to secure more examples of American work for your exhibition than the few I was able to collect after receiving an invitation from your excellent secretary, Mr. Spiller, a few weeks ago.

A New Effect.—I enclose you some prints which present a peculiar effect, in some instances quite pleasing. They have been pressed with a piece of coarse linen over the face. In that way a sort of a stippled effect is produced. Some of these I send were first pressed by a chromo-lithographer in the same manner in which chromo-lithographs are pressed to give them the appearance of canvas, and then rolled under slight pressure to subdue the effect. In other instances a sheet of linen is laid upon the face of the print, then another card, and the whole pressed together. The latter method is found to be the most pleasing, particularly for large heads. I send you the idea for what it is worth. It is an experiment here so far.

With best wishes for the success of your exhibition,—
Very truly yours, Edward L. Wilson.
Philadelphia, November 4th, 1870.

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SUGGESTIONS FOR A NEGATIVE PAPER PROCESS.

BY WM. BLAIR.

A convenient negative process on paper for tourists and others has been long felt to be a desideratum. Considerable effort has been put forth to supply this want, and many valuable suggestions have been made; but as it has hitherto been considered a *sine qua non* that the results should compete favourably with glass negatives, the materials used, or the manner of using them, seem to have baffled experimenters in attaining the conditions and results aimed at.

A very simple but fortunate idea sometimes gets us over an apparently great difficulty. The process which I am now to describe will be found, I think, sufficiently simple for practical use, and also sufficient in point of excellence to cope with all the requirements of the case.

It will be seen that the process referred to bears a close analogy to, and, indeed, may have been suggested to my mind by, Mr. Swan's double transfer process in carbon printing. The details are these:—

Take a piece of paper coated on one side with india-rubber varnish—Swan's rubber transfer paper will answer very well. Coat it in any convenient way, on the india-rubber side, with iodized, bromo-iodized, or bromized collodion, and sensitize by floating on the silver bath; wash, tanninize, albuminize, or treat with any of the other preservatives used; and dry, of course, in the dark. The rubber paper may be collodionized direct (and, for the *wet* process, must be so), or the collodion may first be poured upon glass and sensitized, and washed, and afterwards, when dry, transferred to the paper by means of the varnish. In whatever way prepared, it is now ready to be stowed away in a blad or between the leaves of a book, and so taken on a journey to be exposed in the camera. It matters little how thick this paper is on which the collodion is spread, as it is intended as a mere temporary support. Good *white* smooth paper will naturally be used, however, and it will have the advantage, which I noticed in a former paper, of increasing the effect of the light thrown on the film, and thereby shortening the exposure. The prepared sensitive paper can be cut to any sizes for exposure in the camera, and, during exposure, can be attached by the corners to any convenient flat substance.

The development may be accomplished on the journey, or left till return home, according to convenience. Either while still wet, after development and fixation—or, if these have been carried through before—then after being again wetted, the negative should be laid, back down, on a piece of plate glass or other level surface, and placed on a level stand. A tolerably thick coating of warm gelatine, to which, perhaps, a trace of alum and a little glycerine are added, should then be poured over it, and when set, it may be hung up to dry in the same manner as carbon tissue. When dry, a little benzole can be applied to the rubber paper, and it is removed, leaving the negative upon the clear gelatine. Such a negative can be printed from on either side. Of course, if it is desired to strengthen the gelatine support by any other transparent medium, this may be done; indeed, if desired, the negative film may be attached to glass, either reversed or otherwise, according to the use to be made of it, and it may be varnished in any way thought necessary.

As already indicated, negatives may be got on the rubber paper by the *wet* process if desired, and developed by flotation on an iron bath. The less the paper is wet on the back during the different operations the better.

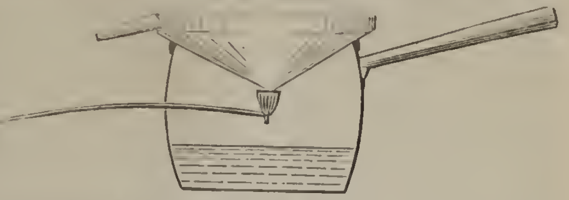
It will be observed that although the above process bears a resemblance to Mr. Swan's double transfer process, as I have already said, yet it does not require his heavy presses or other machinery to work it, and, therefore, in this respect, it is more practicable for amateurs, and even professional men; and surely it will not be considered too much to bestow a portion of that trouble upon a negative which Mr. Swan did not hesitate to bestow upon each of his prints. Such as desire to try this process for work in the field next summer should practise it a little beforehand. I am trying it at present by gaslight, using a condensing reflector, in the production of negatives from negatives, &c.

A SIMPLE AND EFFICIENT STILL.

BY FREDERICK DRESSER.

The still which you illustrated last week is much cheaper and simpler than the ordinary worm still, but not so simple as—and, I dare say, not more effective than—the one I now offer to place before your readers. It is my own contrivance, copied partly from the old stills that have been used by the Hindoos from time immemorial, so I can safely affirm that the principle is not patented.

Provide yourself with an old saucepan (the larger the better), and either invert the lid upon the pot, or, what is better, get a conical lid made by a tinsmith according to the sketch, with a spout to allow the excess of warm water to flow away when cold water is added, and a small piece of wire about one inch long soldered to it at the apex of the cone. Then bore a hole in the saucepan for a common tobacco pipe, and place the pipe with the bowl in the centre of the pot immediately below the apex of the lid, inverted, so that the piece of wire rests inside the pipe bowl. Now put a little water in the saucepan, and boil with a gentle heat.



This still, if carefully handled, will work admirably. It is better to allow the still to work a short time before collecting any of the distilled water for use, as it will then be purer.

THE EXHIBITION AND THE PRESS.

We resume our extracts from the public press in relation to the exhibition:—

From the Daily News.

The present exhibition of the Photographic Society, which has been opened in Conduit Street, Regent Street, marks another step in the progress of an art which is as yet only in its infancy. The exhibition is, in itself, intrinsically interesting; but its value as displaying the recent efforts and successes of photography will be best appreciated by those who have been watching the development of what may be almost regarded as a new art. If there is in the present exhibition a marked absence of foreign works—from causes which are obvious—the show of home products is most satisfactory, both in landscape and in portraiture. Among the former the instantaneous photograph is naturally prominent; one of the best examples being No. 58, by Messrs. Robinson and Cherrill, representing a heaving and tumbling mass of waves, with here and there a white-winged gull caught in actual flight. We observe in many of those pictures, however, that an obviously stuffed bird has been suspended in the middle of the landscape—the pheasant or pigeon, as the case may be, looking somewhat galvanized and stiff. Among the instantaneous photographs, No. 68 deserves especial notice as being a real moonlight picture—not one of the blackened sunsets which go by the name of moonlight scenes. Perhaps the most striking landscape in the exhibition is Mr. F. C. Earl's "Lledr Valley" (No. 44), a large and admirable study, in which the various distances—taken on different plates, of course—are very ingeniously blended. Messrs. F. and W. Bedford send a number of very beautiful landscapes; and Colonel Stuart Wortley contributes a series of sea pieces of effective composition. A vignette view of Loch Katrine (No. 85), by Mr. Brownrigg; the pictures contributed by Mr. R. M. Gordon (76-81); some views of Scottish scenery (331), by Mr. J. Valentine; and a number of Egyptian and Indian pictures, by Captain Lyon, also merit attention. In portraiture Mr. Valentine Blanchard is *facile princeps.* The series of powerful studies (Nos. 19-29) which this gentleman exhibits are not only apparently excellent portraits, but are very striking works of art—their boldness and sharpness of effect being combined with an admirable softness of detail. Mrs. J. M. Cameron exhibits a number of large portraits, the technical deficiencies of which are condoned by a certain misty glamour which she has thrown over her best subject. Mrs. Cameron has been fortunate in securing a very pretty and pathetic face for her studies, but it is a face which better suits such subjects as "Beatrice Cenci" or "The Kiss of Peace" than "May." Some admirable enlargements by Mr. Albert Moore, exhibited by Mr. G. Wharton Simpson. Colonel Stuart Wortley's large direct portraits (99-108), an excellent series of instantaneous sketches of children (84) by Miss Pritchard, are all valuable additions. Besides these, the visitor who knows anything of the recent experiments and triumphs of photography will be pleased to find examples of Mr. Woodbury's mechanical process which are equal in minuteness and delicacy to the finest silver prints. A series of imperishable photo enamels by M. De Camarsac, exhibited by E. Bondonneau, and another series of large micro-photographs by Messrs. Robinson and Thompson. The exhibition altogether is a very good one, and will interest amateurs as well as more scientific students.

From the Echo.

The annual show of photographs, under the auspices of the Photographic Society, was opened on Tuesday evening at the Architectural Society's rooms, in Conduit Street, and the display shows in many points a decided advance on any previous collection of photographic works. The time seems to be passing away when a photograph was admired simply because it was cleverly manipulated, and a strong demand has arisen for the infusion of artistic feeling and taste into the works of photographic artists. Taking a glance through the room, catalogue in hand, the first noticeable picture is a pretty bit (14), entitled "At Keston, Kent," and exhibited by Mr. R. Mitchell, the effect being, however, somewhat marred by the careless way in which the sky is printed in. Mr. Blanchard shows some good portrait studies, 24, an "Italian Girl," and a full length figure of a lady, being among the most noticeable; albeit more careful arrangement of the backgrounds would have benefited the general effect of the pictures. Mr. F. C. Earl shows (44) a very fair landscape, in which the middle distance and the distant hill partially shrouded in mist are finely rendered; his "Woodland Path" (45) being also an excellent bit of work.

Messrs. Robinson and Cherrill show some exquisite studies on the sea-shore, the tumbling wave in "The Turn of the Tide" being most perfectly rendered, while "Outward Bound," "The Foaming Shore," "The Beached Margent of the Sea," and "Breaking Waves," have each beauties of their own. Mr. R. M. Gordon shows, as usual, some of the gems of the exhibition (79), "On the Thames, Richmond," being one of the most charming pictures we have ever seen. Some clever photographs of children and animals by Mr. Faulkner attract attention, and (97) a head by Mr. Lafosse is well lighted and forcible.

Colonel Stuart Wortley's ten *genre* studies of large size are magnificent, and "My Queen," "The Sybil," and "Childhood's Treasures," are perfect. Verging on life size, the modelling of the flesh is as soft as in flesh itself, and the artistic treatment noticeable particularly in that stumbling-block to the photographer, the hand and arm, is remarkable. In landscape also Col. Stuart Wortley is pre-eminent, "Evening," a cart drawn by oxen plodding home under a tender grey sky, being, perhaps, the most charming of his works. Mr. Sanderson shows some good landscapes, and Mr. Brooks has a very clever study (160). Mr. Moore's enlargements, shown by Mr. G. W. Simpson, are wonderfully good, and (209-210) enamels by Mr. Henderson are, with those of Mr. Lafon de Camarsac, well worthy of notice, those shown by Mr. Solomon being hard and coarse by the side of the above-named.

Mrs. Cameron shows many studies, some of them displaying an earnest appreciation of art, and Mr. Briggs has some good portraits. Captain Lyon's Indian landscapes are of the highest interest, and many of Mr. Rejlander's studies will repay inspection. In new processes there is not much to chronicle, and Messrs. Sarony's picture of the Lancashire Relief Committee does not do justice to the carbon process, the sombre tone and heavy opaque shadows being especially unsatisfactory.

The Woodbury photo-engraving process shows a marked advance towards the perfection of mechanical printing in connection with photography, and Mr. Belton's matt-paper prints are soft and good. We close our brief notice with a strong recommendation to our readers to visit this most interesting display of photographs.

From the Architect.

The Photographic Society has opened its annual Exhibition of specimens of photography—which will remain on view till the end of this month—at No. 9, Conduit Street; and, good as many of the works are, the visitor in search of novelty and progress will experience a feeling of something like disappointment as he compares its contents—as far as they consist of pure photographs—with the display of former years, and with that attractive and constantly varied exhibition which is open daily all the year round to the lounger in London streets as he looks in at the shop windows. We do not mean to say that there are no fine portraits, no remarkable landscapes, and no successful studies of effect and character. All these things there are, and plenty of them. But this is exactly what we have become used to, and the advance in size or style, which might be expected to be very general, is only confined to a few specimens. In fact, some of the members who in former years have been prominent exhibitors are this year conspicuous only by their absence. And though the work of such contributors as Mr. Earl, Colonel Stuart Wortley, Captain Lyon, Mrs. Cameron, Messrs. Robinson and Cherrill, Mr Blanchard, and many others whom we could name, is exceedingly good, being often strikingly artistic as well as skilfully manipulated, yet we have known for years that these and other equally well-known artists had so overcome the enormous difficulties which beset the path of the really high-class photographer, that their productions could be looked for as being certain to reach a well-known and a very high standard. But, after all, the feeling remains that we have seen things more or less like these, and equal to them, elsewhere; and it, in fact, is not among the ordinary photographs that the novelties of this year's display must be sought. The frames which contain specimens of the work which is likely to render photography a new agent, and to introduce it to a larger field than yet has been occupied, are those which contain reproductions of drawings, prints, pictures, and natural objects, of which the negative or original copy is produced by a photographic process, but the copies are *printed in a press with printer's ink.* This has been practised with limited success for some few years, but difficulties have stood in the way of its adoption for practical purposes, which are only now beginning to disappear.

When it was found that drawings upon stone could be printed in a press—in other words, when lithography was discovered—the doom of steel engraving, and, to a large extent, of copper-plate engraving, was sealed. Lithography, wood-engraving, etching, and all this group of arts, seem in danger, in their turn, of being eclipsed by Heliotype, Woodburytype, Autotype, and the other varieties of what may be termed photo-printing, or rather by the perfected system which will grow out of them all when experiments upon experiments have been tried in the search after increased simplicity and efficiency.

In some of the earlier processes the general nature of the plan followed was that which is also pursued in photo-lithography. The picture made by the action of light on the plate in the camera is formed upon a film of some substance soluble in water, but of which the portions affected by the light are rendered insoluble by the chemical action of the solar rays. The portions that remain untouched are then washed away, and a kind of network of lights and shades remains in relief, from which is obtained, in various ways, according to the modes of procedure followed, a plate capable of being covered with printer's ink and used in a press, and furnishing excellent results. The more recent improvements—such as the process known as heliotypy—however, dispense with all relief, and, consequently, the soluble and insoluble film, the washing, and other parts of the process, which required time and skilful handling, are all done away with. The photograph is now made on a surface which has the property that the portions of it that are affected by light are rendered capable of retaining a certain sort of printer's ink, while those not acted upon will not take the ink—precisely as the marks of the photographic draughtsman result in making the stone which he makes use of retain the ink. This being once possible, it is easy to see that a great stride is effected; for in heliotypy, while the means of taking negatives remain much as they would have been had the ordinary reproduction of copies by the agency of light been intended to be provided for, the result is that a plate is produced in the camera* which, without any transferring process, can be inked and worked from as if it were a lithographic stone. The delay, the uncertainty, the risk of fading, the dependence upon weather, the necessity for mounting, which beset photographic printing, all disappear; and with these a great many other disadvantages—including, of course, the high cost of copies—are removed, so that now we seem to see our way to a cheap, rapid, durable, and faithful reproduction of architecture, paintings, drawings, landscape, and, in fact, all objects, natural or artificial, which it may be wished to illustrate. Messrs. Edwards and Kidd equal, as it seems to us, in the best specimens of heliotype exhibited by them, the works of the Autotype Company executed by the earlier and more elaborate process, and which were long ago brought under the notice of the readers of the *Architect*; and we can only say that the excellence of a few of the specimens exhibited in Conduit Street points to the process as one which bids fair, in a longer or shorter time, to make a revolution in the art of engraving.

From Nature.

The Annual Exhibition of the Photographic Society of London was opened at the Architects' Gallery, No. 9, Conduit Street, by a private reception of their friends by the members of the Society, and the exhibition will remain open to the public until the last day of the current month of November. The exhibition is quite as large as was the eminently successful exhibition of last year, and certainly leaves the impression that there is manifest and unmistakable evidence of progress in the art during the year. The work of many of the leading and best known exhibitors is in advance of their exhibited specimens of the last year, and there are some individual photographs now to be seen upon the walls of the gallery which, it can hardly be too much to say, are of higher excellence, both as pictures and as photographs, than any that have before been produced. We may mention, in particular, ten large portraits by Col. Stuart Wortley, taken direct from life, and marvellous specimens of tasteful and exquisite portraiture; two large portraits, also from life, by Mr. Warwick Brookes, of scarcely inferior power and excellence; Vandyke and Brown's solar camera enlargements of the poet Longfellow; and Mr. Blanchard's large Rembrandtesque life portraits. Of large landscape work, Mr. Care, of Worcester, deserves special notice; and Mr. Robinson's sea pieces, "Turn of the Tide" and "Outward Bound," are admirable bits of true nature. Mr. Robert Faulkner has some very pretty applications of the instantaneous branch of the art in catching the fitful aspects and characteristics of children; and Mr. Vernon Heath has two exquisite bits of true scenery and foliage; nor ought we to pass by "Hop Picking," by Mr. Stephen Thompson, and Captain Lyon's Indian pictures; and we may add to this list Mr. Manners Gordon's small pictures from dry plates.

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* As our readers will see, the writer is a little in error as to the mode of obtaining the heliotype printing plate.—Ed. Photo News.

From the Mechanics' Magazine.

According to its annual custom the Photographic Society has opened an exhibition of pictures taken by its members, and this exhibition is now open, free of charge, to the general public, in Conduit Street, Regent Street, on the ground floor of the building occupied by the Royal Institution of British Architects. Some of the photographs are very fine ones, and the exhibition, which will be open throughout November from nine o'clock in the morning till dusk (Saturdays and Sundays excepted), well deserves a visit.

One of the finest pictures in the whole collection is a view of the Lledr Valley, with Moel Seabod under mist in the distance; this fine picture, by Mr. F. C. Earl, is not, however, a specimen of pure photography, since it is printed from several different negatives. Another photograph by Mr. Earl, of a view near Pandy Mill, is a very splendid specimen of photographic work. Among other landscape pictures of considerable merit is one by Mr. F. E. Currey, of Lismore Castle and the surrounding scenery, also some good views of Indian scenery, by Captain E. D. Lyon. Mr. Vernon Heath's pictures are of a superior kind.

Messrs. Robinson and Cherrill have some very fine and large sea views, taken instantaneously, so as to secure sharp definition of the waves and breakers; some birds on the wing are also included in some of these pictures, but these have been introduced artificially, and were not in the original negatives.

The best large show of portraits in the exhibition is that of specimens of work done by Mr. Valentine Blanchard, who produced some noted instantaneous views of the streets of London several years ago. These portraits are taken in the style originated by M. Adam-Salomon, who himself recently visited London, but who on this occasion has sent no pictures of his own to the exhibition.

Some photographs having rather a sensational appearance, by Colonel Stuart Wortley, occupy a very large share of space in the exhibition. The sea views are some of them taken with very short exposures, in order to obtain moonlight effects. Although from a photographic point of view some of these pictures are not bad, much work of more merit is less conspicuously placed.

As regards dry-plate photography the largest pictures in the exhibition taken upon one plate with one exposure are some views by Mr. W. D. Sanderson of the scenery near the Pass of Aberglaslyn, also some landscape pictures taken in other districts. They were taken by the collodio-albumen process, and are highly meritorious specimens of work. Mr. Russell Manners Gordon exhibits some small and good pictures taken by various dry-plate processes. One of these shows the Eel Pots at Caversham, taken by the Fothergill process, with a final wash of acetate of morphia; another represents Burnham Beeches, taken by Hannaford and Bartholomew's modification of the Fothergill process; a third is a view on the Thames at Richmond, by the the Taupenot process; the fourth, a view on the Llugwy, North Wales, by the gum-gallic process; and the fifth is a view of Peak Fort, Madeira, by the resinized collodion dry process.

The best photographic enamels on view are those by Mr. A. L. Henderson. For artistic merit and well-selected and interesting subjects the pictures by Mr. Adam Diston deserve special commendation. Mr. J. Kay, of Bolton, exhibits a glass transparency backed by white paper, and when the question of permanency brings on stronger competition between the silver and the carbon printing processes it is not impossible that by some modification of Mr. Kay's process silver might be enabled to hold its ground, with the advantage that the printing could be done by artificial light. The cracking of the varnish, or its destruction by time, is the worst foe to the permanency of this kind of picture.

Of the ordinary carte-de-visite portraits on albuminized paper, those by Dr. Wallich, of 2, Warwick Gardens, Kensington, are among the finest in the exhibition; they are very delicate and perfect pictures. Among the gentlemen who have been photographed by him are Professor Tyndall, Professor Huxley, Professor Stokes, General Sabine, and many leading men of science.

Mr. Breeze's stereoscopic transparencies are, as usual, very beautiful, and appear to be views of star-lit scenes and of landscapes taken by moonlight. When under-exposed negatives are used to print with, the resulting picture looks as if taken by moonlight, and on this principle are these transparencies produced.

Another feature of the exhibition deserves special notice, namely, some micro-photographs of entomological and other subjects, produced by Mr. Thomas Higgin, aided by Messrs. Robinson and Thompson, of Church Street ,Liverpool. The pictures include a selection of diatoms, one of which has been enlarged to 800 diameters, and all the photographs are of wonderful brilliancy and sharpness. The pictures were taken by the aid of the lime light and an enlarging camera; the apparatus used is on view in the room.

The *Journal of the Photographic Society*, which contains a catalogue of the pictures, is on sale at the exhibition, and from its pages we learn that "the very foundation of the Photographic Society dates from the first public 'Exhibition of Recent Specimens of Photography,' displayed in the large meeting room of the Society of Arts in December, 1852; and one month later Sir Charles Eastlake, at that time president of the Royal Academy, was formally installed as the first president of the newly created Photographic Society. Since January, 1843, fourteen annual exhibitions have been held, besides that which constituted an important feature and special department of the International Exhibition of 1862." The present may be called the fifteenth annual exhibition of the Photographic Society.

Before closing this notice of the exhibition it may be stated that among the specimens of photographic apparatus on view is a new camera for dry plates, made upon the principle patented by Mr. Cook. All the plates are packed away in the dark slide, which is made in two compartments, and the mechanical arrangements are such that the plates can be brought to the front and exposed in rotation. It is an ingenious plan, likely to be very useful to photographers.

ON HELIOTYPY AS A MEANS OF REPRODUCING WORKS OF ART.*

The practical details of the process thus successfully worked out are, briefly, and without technical minutiæ, as follows:—A plate of glass, about half an inch thick, more or less, is coated with a warm solution of gelatine to which a suitable proportion of bichromate of potash has been added. A measured proportion of this preparation is poured on the plate, so that when dry it will form a film about the thickness of a visiting card. This operation and the drying of the plate are effected in what is technically called the "dark room," a room from which all actinic light is excluded. When the film is dry it is exposed to light under a photographic negative, the time of exposure being estimated by means of an actinometer. The next step is to place the plate in cold water for the purpose of dissolving out all the unchanged bichromate of potash. After soaking for a short time the image produced by the action of light on the film is seen in relief: the portions protected from light by the opaque parts of the negative, representing the whites in the picture, readily absorb water, and swell; the portions to which light has had full access through the most transparent parts of the negative, representing the blacks, have been hardened by the light, and rendered insoluble and non-absorbent; whilst all the portions partially acted upon by light, through the graduated degrees of transparency in the negative, representing the gradations from light to dark in the image, have been rendered insoluble and non-absorbent just in the degree to which they have been subject to the action of light. The plate, after being thoroughly washed in cold water to remove all the bichromate of potash, without dissolving any portion of the gelatine, is ready for printing. We should have added, however, as an important point of treatment in the heliotype process, that another addition is made to the gelatine with which the plate is coated. As will readily be conceived, the gelatinous film we have described would bear but very little of the friction or pressure necessary in mechanical printing. To meet this difficulty advantage has been taken of another known reaction of a chromic salt upon gelatine. By the addition of a trace of chrome alum to the gelatine solution the film acquires a degree of hardness and toughness throughout which enables it to bear without injury the manipulations necessary in mechanical printing. The action of the chrome alum also limits the degree of relief assumed by the image, and thus materially facilitates the subsequent operations at the press.

The printing process bears analogy to the operations both in lithographic and letter-press printing. The press used is that employed in the latter method. The ordinary platen press, known as the Albion press, is that used in the Heliotype printing establishment. The glass plate, resting on a sheet of vulcanized india-rubber to give elasticity to the pressure, is placed on the carriage of the press. The usual felt blanket in the tympan of the press is also supplemented by a sheet of india-rubber, to secure further elasticity. When an impression is about to be produced, the printing surface is sponged with water, the superfluous moisture being first removed with an india-rubber scraper called a *squeegee*, and the remaining traces absorbed by a piece of blotting-paper. An india-rubber roller charged with lithographic ink is then applied to the surface. The ink readily adheres to the deep shadows, which, being hard, insoluble, and non-absorbent, have repelled the water altogether; to the parts representing the various gradations of tone the ink adheres in such degree as they have rejected water, producing a perfect transcript of the original negative in the proportion of ink remaining on the different parts of the image. A sheet of fine plate-paper is then placed upon the inked surface; the tympan, forming an elastic covering, is then placed over all, and the impression is pulled in the ordinary way. Where a clean margin is required, a paper mask, with an aperture of the proper shape and size, is placed over the inked surface, before the plate-paper is put down. By this means prints with perfect margins, without mounting, are obtained, affording a great advantage in work for book illustration.

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* Continued from p. 538.

A very important element in securing excellence and increased gradation of tone remains to be noticed. It has been found that if a very stiff ink be employed it only adheres to the deepest shadows of the image on the gelatine surface, the lighter half-tints rejecting it altogether. A thin ink, on the other hand, adheres readily to the most delicate tints in the image as well as to the deepest tones. If the picture were printed with the stiff ink, an impression possessing vigorous blacks, but lacking the more tender and delicate gradations, would be produced. If it were printed with the thin ink, an impression presenting every gradation, but, from the poverty of the ink in colour, lacking force or vigour in the blacks, would be obtained. This apparent shortcoming affords really a very valuable extension of the capacity of the process. By rolling the plate first with a stiff ink, fine vigorous blacks are obtained in the deeper tones of the print; and by a second rolling with a thin ink the most tender demi-tints are duly rendered, the second rolling in no degree injuring the first applied dark ink adhering to the blacks. This peculiarity of the printing surface also permits the production of impressions in two tints, and confers a quality of great value in many cases. A good example of this effect may be seen in the examples of *Dormers* in the third number of this journal. It will be seen on examination of these prints that the deep shadows are of a rich black, while the lighter tones are of a warm or brown tint, giving tenderness and transparency to the impressions. This varying degree of affinity for different kinds of ink also presents several technical advantages of great value in practice, upon which it is unnecessary, however, to enlarge here.

Of the illustrations which have appeared in this journal the greater number are heliotypes, affording excellent examples of the fitness of the process for rendering all classes of subjects. . . . In reference to copies of drawings, &c., it is right to remember that in certain cases the coarse texture of the paper in the originals is inevitably reproduced, and sometimes slightly exaggerated, in photographic reproductions, and that these now published are examples of a new process involving in almost every part new principles, requiring new technical treatment, and demanding new training in workmen. And therefore, whilst but little apology is needed for the results which have been achieved, improvement may be expected to follow each step of experience, and steady progress in excellence will doubtless follow continued practice.

The combination of photography and the printing-press must assuredly give an enormous impulse to the popularization of art in its best forms. The conceptions of the great masters need no longer be "pent up in galleries open to but few, but may meet us in our houses, the household pleasures of millions. Works designed for emperors, popes, and nobles, will find their way, in no poor representations, into humble dwellings, and sometimes give a consciousness of kindred powers to the child of poverty." Perhaps in no other way could the study of good art be made so accessible, or its influence so much extended.

Correspondence.

RETOUCHING IN THE EXHIBITION.—DETRACTORS.

Sir,—A question is raised in a contemporary, by "An Exhibitor," which has been discussed several times before, but apparently never settled. The question is, whether touched pictures sent to an exhibition ought not to be described as touched. I think that where pictures are competing for a prize, such description should be imperative; but where, as at the exhibition in Conduit Street, the sole object is to make a display of the progress and present condition of the art, no such condition is necessary. Whilst a knowledge of the means whereby certain results are produced may doubtless be interesting to photographers, it is the quality of the results in which the cultivated public—of whom a great many visit the exhibition—feel interested.

Photography now begins to claim consideration as an art, and the best photographers are content to be criticised as artists; and surely it is an impertinence to be perpetually intruding the means of production in relation to a work of art. Imagine such a thing in relation to the meanest work in the exhibition of the Royal Academy!

"An Exhibitor" objects to retouching because, he says, clearly the merit belongs to two people: the photographer and the retoucher. But surely, if he intend to take exception on this ground, he will not limit the division of honours to two people. Besides the exhibitor and retoucher, there may be the operator and printer, and the optician, and the collodion maker, all of whom, besides others, must contribute to a perfect result. But without carrying the matter out *ad absurdam*, and resolving all merit into "unlimited capital," is it not clear that, as a rule, with very unimportant exceptions, the merit is chiefly due to the conceptive brain of the well-known artist who exhibits, and often, in all important elements, to his own skilful hands in executing, no matter how, his work?

The writer in question says, "Clearly the merit belongs to two people." Is it so clear? I know many photographers who do not disdain to retouch their negatives, who never trust them to other hands than their own. Does this much modify the legitimacy of retouching?

I dislike the practice of imputing motives, and, therefore, I will not affirm that the letter in question seems to have for part of its aim an unworthy insinuation that the excellence of Mr. Blanchard's portraiture is due to retouching, and the revival of a refuted untruth to the effect that the wondrous excellence of M. Adam-Salomon's pictures was due to retouching. If I am not mistaken, rough unmounted prints of the very pictures whose beauties were said to disappear on sponging, were shown by yourself to prove that they were the same in detail as the finished pictures, and the anonymous "person of an enquiring turn of mind" never attempted to substantiate his misstatement. In reference to Mr. Blanchard's pictures, no defence is required, as he publicly exhibited some of the negatives from which the choicest of his last year's contributions were printed.

Will photographers never learn the folly and meanness of petty jealousy and detraction, and the baseness of making the most liberal members of their profession the victims of that detraction? Mr. Robinson, whose name is distinguished as an artistic photographer throughout the world, has always contributed, with the most liberal readiness, full details of the mode of securing his best results. He is sneered at as using "dodges," for his pains; and he very naturally resolves in futuro to keep the dodges to himself. Adam-Salomon, a foreign artist of distinction, astonishes the world with his grand portraiture. He receives every English photographer who calls upon him with courtesy, shows his studio, and explains his operations. "Dodge, retouching!" is again the cry. Mr. Blanchard has been one of the most open and liberal in connection with every branch of the art he has practised. But he has been guilty of the sin of transcending all others in the magnificence of his portraiture, and hence the legitimacy of his triumph must have a doubt cast upon it.

I do not think that this spirit is universal amongst photographers, but, unfortunately, those who indulge in it are often energetic enough to be heard, and so create a notion that it is common. I think that all who see its evil are bound to aid in counteracting it, or, at least, protesting against it.—Yours,

Respice Finem.

PIRACY AND COPYRIGHT.

Sir,—With reference to your remarks in your issue of the 11th instant, I will here state how I arrived at the conclusion that registration is imperative upon the artist. Section 4 of the Copyright Act says:—"There shall be kept a book or books entitled 'The Register of Proprietors of Copyright in Paintings, Drawings, and Photographs,' wherein *shall* be entered a memorandum of *every* copyright to which *any* person shall be entitled under this Act, and also of *every* subsequent assignment of any such copyright; and such memorandum shall contain a statement of the date of *such agreement* or assignment. . . . . No proprietor of any such copyright shall be entitled to the benefit of this Act until such registration." The section plainly directs that *every* copyright be entered, which direction necessarily includes the copyright of the author, otherwise every copyright would not be entered; "and also of *every subsequent* assignment." Subsequent to what? Why, to the first entry of proprietorship. The memorandum is also to contain a statement of the date of *such agreement* or assignment. The words "*such agreement*" were a puzzle to me. Agreement is not mentioned in the preceding part of the section. Bearing in mind the maxim, "Lege totum, si vis, scire totum," I sent to the House of Lords and to Hansard's for copies of all the papers relating to the Act ordered by the Legislature to be printed during the session of 1862. The mystery was soon solved. The original Bill was introduced into the Commons by the Attorney-General, the Solicitor-General, and Mr. Massey. It was very comprehensive. It gave copyright in *all* paintings, &c., &c., to *all* authors. A suggestion was made by a member of the Commons that a registration clause should be introduced. The Bill was amended accordingly, and passed. By the first section, copyright was vested in the author, with a condition that at or before the time of sale of the work a written agreement be made, either reserving the copyright to the vendor, or transferring it to the vendee. Section 4 directed that a register be kept, "wherein shall be entered a memorandum of every agreement for the acquisition or reservation of copyright made upon or before the sale of any work of art under this Act, and also of every subsequent assignment of any such copyright. . . . . And unless such memorandum shall be so registered within the period of twelve months from the date of such agreement or assignment, every such agreement or assignment which shall not be so registered shall be void and of no effect. The wording of this section is clear and precise, and had the House of Lords not amended it, most of the prosecutions for infringement of copyright would never have been instituted. The Bill was sent to the Upper House, and then its troubles commenced, the Lords appearing to have a deeply rooted antipathy to it.

Upon referring to Hansard's Debates I found the following passages in the speeches of two noble lords. Vol. 166, page 2013, May 22, 1862, Lord Granville: "As between the artist and purchaser, it was provided that the copyright passed to the purchaser with the work of art, unless it was specially reserved to the artist by written agreement. After the agreement was made, it was to be registered at Stationers' Hall, in the same manner as a literary work, and assigned in the same manner." Page 2014, Lord Overstone: "Again, the Bill provided that copyright might be reserved at the same time the picture was produced, but the registration of it was not necessary for a twelvemonth. The consequence would be that there would exist a copyright unknown to the public for the whole period of one year. It was obvious that if a copyright was to be granted, the registration of it should accompany, if not precede, the first production of the work, otherwise, copies made previous to registration, and purchased in good faith by parties ignorant of the suppressed copyright, would be liable at any moment to be seized and suppressed." Page 2094, May 23, 1862, Lord Overstone: "His third suggestion had reference to the question of registration; not a single word had yet been said in explanation of that extraordinary clause in the Bill which provided that copyright was to be obtained without the necessity of registration except after the lapse of a twelvemonth. An arrangement more inexpedient, more impolitic, and more inconsistent with justice could not well have been devised. He trusted the objections which had been raised against the Bill would lead his noble friend, the President of the Council, more carefully to consider its provisions, and introduce into it those modifications of which it stood in need." His Lordship had a decided objection to registration being deferred for a twelvemonth. What would his Lordship say to registration being deferred for six years, as in the case of "The Railway Station?" In consequence of this opposition the Bill was referred to a select committee, when the following amendments were made:—

June 18th, 1862. Upon the motion of Lord Chelmsford, the word "*original*" was ordered to be inserted in the first clause before the word painting. Upon the motion of Lord Chelmsford, in the 4th section, the words, "every agreement for the acquisition or reservation of copyright made upon or before the sale of any work of art under this Act," were ordered to be left out, and these words inserted, "every copyright to which any person shall be entitled under this Act." It is here that I think the committee should have modified the two words "such agreement," now standing in the clause, and before referred to by me.

July 9th, 1862. Upon the motion of Lord Cranworth, the words in the 4th section, "and unless such memorandum shall be so registered," to the end of the section, were ordered to be left out, and the following words added, "and no proprietor of any such copyright shall be entitled to the benefit of this Act until such registration." The Bill, as amended, was read a third time, passed, and sent back to the Commons. The Solicitor-General had charge of the Bill in the Commons, and in his speech (July 24th, 1862) he said: "That the Bill, as originally introduced, gave a copyright in works of art to all persons without distinction, whether foreigners or British subjects; but the House of Lords had introduced an amendment which would leave foreigners to resort to the International Copyright Act in case of an infringement of their copyright. That, he thought, was not a material alteration. Next, the House of Lords had introduced an amendment requiring registration in all cases to *precede* the acquisition of copyright. If the House opposed these amendments, the passing of the Bill that session would be endangered, and therefore he was prepared to ask the House to agree to them." To these amendments the Commons agreed.

I think I have proved that whatever interpretation magistrates may make of the Act, there can be no doubt that the Legislature intended that registration should, in the words of Sir Roundell Palmer, *precede* the acquisition of copyright. The Act says that no proprietor shall be entitled to the benefit of the Act before registration. It has been argued that the word benefit means merely the power to prosecute for infringement of the right. The truth of that proposition I cannot admit. An artist, in the course of his life, may receive sums of money for copyright, and neither he nor his assigns may have occasion to prosecute. Can it be said that he has derived no benefit from the Act? Has he not benefitted by the fact that he, by the operation of the Act, has had vested in him the sole and exclusive right of reproducing his works, and the power of legally assigning that right to others for a valuable consideration? If registration only becomes necessary when a proprietor wishes to prosecute, it follows that the register is not a register of *every* copyright, but only of those copyrights for infringement of which prosecutions are required. Thus the object of registration would be defeated, the register being intended to furnish a history of every copyright, from its creation to its expiration.

I had written thus far when your issue of yesterday reached me. At the risk of occupying too much of your space, I must beg permission to say a few words with reference to your remarks. The old and well-known trick is one which exists only in the imagination of Mr. Brooks. Let him produce some evidence of its existence before he asks others to believe in it. In the case of Mr. Knight, the four pieces bearing the stamps of Mr. Brooks, cut by myself from the four photographs, are still in my possession. Let Mr. Brooks produce the four photographs, and let them and the pieces be compared by an expert like yourself, or Mr. Spencer, of Shepherd's Bush, who, I presume, printed them, and the question of authenticity can be settled in five minutes. This is a fair challenge. Will Mr. Brooks accept it? I do not admit that a photographic copy of a painting is an original work of art; but for the purposes of this argument that is of no consequence. I have no report on the case Brooks *v.* Golding, but I think, if I remember rightly, that it was a case tried, not before a judge, as Mr. Brooks states, but before Mr. Travis, magistrate at Hull. I write from memory, and am open to correction for any misstatement. The defendant was summoned for selling lithographs of the "Life Boat," said to be an infringement of the plaintiff's copyright in a photograph taken from a painting of that subject. From the evidence it appeared that a photograph had been taken from the painting and registered. From the photograph an engraving was made. It was the circumstance of the engraving having been made from the photograph, and not from the painting, that impressed the case upon my mind. The defendant's lithograph was probably made from the engraving, and that being so, it follows that it would be also a copy of the photograph, and an infringement of the copyright thereof. On the other hand, if the lithograph had been made from the painting, there would have been no infringement. Had the magistrate based his decision in favour of the plaintiff upon this point, he would have been right. He did not do so, and took time to consider his judgment. A few days afterwards he delivered it. He said he had carefully considered the evidence, and had come to the conclusion that there was strong presumptive proof that the plaintiff's photograph was actually the first photograph taken from the painting, and, therefore, an original photograph. His judgment was for the plaintiff. The fallacy in this decision is in arguing that the first photograph taken from an object is an original photograph by reason of its priority of execution; whereas the same amount of originality is possessed by all photographs taken from the same object.

I do not see the reason for introducing in the latter part of Mr. Brooks's letter the quotation from the magistrate's judgment. It says:—"I maintain that any person who makes a photograph for the first time from an original picture, although the picture was not registered, is the author thereof. This is simply ludicrous, and I think Mr. Brooks must unintentionally have misquoted it. It is a self-evident proposition. No one would deny that a person who made a photograph from a picture was the author thereof, and whether the picture were an original or a copy, registered or unregistered, would not affect the matter. But stop! I do remember an alderman who has denied the truth of this proposition. He, shrewd man, maintained that when a photographer produced a photograph for his employer, it was the employer who was the author of the work, and not the photographer.

In your answer to "Antique," upon the last page, you correctly state the law, and are in accord with the dictum of Mr. Justice Blackburn, who has decided that the registration of a photograph does not prevent the subject thereof from being copied. This agrees with the second section of the Act, which says: "That nothing herein contained shall prejudice the right of any person to copy any work in which there shall be no copyright, notwithstanding there may be copyright in some representation of the same work." Your argument is sound, but you are under a misapprehension as to the facts. You reason upon the supposition that the defendant's photographs are copies of the plaintiff's photographs. But it is not so. They are both derived from the same source in cases where the charge is for pirating a photograph taken from an engraving.

As regards the case of selling photographs with the wrong name, you say: "The accused had *fraudulently* sold the prints." Am I to understand that you use the word "fraudulently" upon the supposition that the defendant's photographs infringed copyright? It was not so. There was no copyright under this Act in any of the subjects. What distinction can be made in selling a copy of a non-copyright engraving, and a copy of the last page of a newspaper?[*]

At present I do not wish to enter upon the discussion of the "moral right," and the "abstract rights of individuals," but, with your kind permission, will do so at a future opportunity. I wish now to confine my arguments entirely to the *legal* points involved in the statute law of copyright. I deny that I have any bias towards sympathy with infringers of copyright. I look upon them as persons who have, in many instances, been illegally convicted, and that such has been the case I trust I shall be able to prove. It is to the public danger that the possibility of such convictions should exist, and for that reason I desire to draw attention to the matter.

Mr. Brooks's letter I will further notice next week.—I am, sir, your obedient servant, J. Cunnington.

THE LATE ALLEGED PIRACY.

Sir,—I hope you will allow me a little space in your next number in reply to Mr. Brooks's letter in the News of last Friday.

Mr. Brooks says that his man did not go to my place to trap me. I say he did, else why did he write these two letters and come to my place so many times when he knew I had not the photographs? The four photographs were purchased by me before Mr. Brooks reduced his prices, and cost—"Erin Farewell," 8d.; "Grace Darling," 1s. 4d.; "Obedient to the Law," 1s. 4d.; "Patient in Tribulation," 1s. 4d.; in all, 4s. 8d. They were coloured by an artist for 4s., and moulding cost 1s. (total, 9s. 8d.), and sold for 10s. 6d. to Cope, so that my profit was by no means so large as Mr. Brooks says. Mr. Brooks now charges 8d. each for his photographs, and they cost him 1¼d. each, so I am informed by a wholesale dealer in the city, who is supplied by Mr. Lazarus, of Hamburgh, who also supplies Mr. Brooks with his subjects. I have to pay the wholesale dealer 2½d. each for mine, and I sell at 4d., so that the profit I make is very much smaller than that made by Mr. Brooks.

Nearly eighteen months ago I had in my window a photograph called "A Charming Incident." One day a person called and bought it, and ordered another, which I supplied a few days afterwards. Then I received a summons from Mr. Brooks. Then another person called, and he wanted "A Charming Incident." I taxed him with being an informer, which he admitted, and said he knew I had been summoned, and advised me to go to Mr. Brooks and try to settle it. I wrote a letter to Mr. Brooks, to which I received no reply. On the morning of the day when the summons was to be heard the detective called again, and advised me to go to Mr. Brooks. I went with him; we were joined by the other detective. They were two of Mr. Graves's men. We then went to Mr. Brooks's in Hatton Garden. I saw him. I asked him what he would take to settle it. He said he would take nothing less than £20. After some further words I left him, and said I would seek a lawyer. That did not suit the informers, one of whom followed me down the street, and persuaded me to go back. I did so, and Mr. Brooks then said he would settle it for £6 7s. I told him I had only £5, and offered him that. Then he said he would take the £5, and an IOU for £1 7s. I gave him the £5 and the IOU, which I afterwards paid. I did not know then what I afterwards discovered, that Mr. Brooks never had any copyright in "A Charming Incident," which belongs to an American in New York.

Apologizing for the length of my letter, I am, sir, yours respectfully, G. W. Knight.

Tabernacle Walk, Finsbury, E.C., November 23rd, 1870.

[In fairness to Mr. Knight, we give insertion to his statement of alleged facts referring to his case, but have felt it our duty to cut out some of his comments and allusions to matters not connected with the matter. In so far as he appeared to have sinned in ignorance, and in so far as, in the statement of the hearing of the case, his defence appeared to have been unfairly cut short, we sympathized with him; but we scarcely think that he improves his position by any attempt to justify piracy on the ground that his profits are not exorbitant.—Ed.]

PIRACY AND COPYRIGHT.

Sir,—Mr. Cunnington's letter in your last number is so full of mis-statements that I must reply, to put him right.

"The Stag at Bay," which your correspondent says "is *carted off* to Whitechapel, and was once the glory of Pall Mall," never did belong to Mr. Graves. Mr. Graves has *his* "Stag at Bay" plate at the present day, and has his name engraved thereon. It was in relation to this that the dealer in photographs was fined for "selling a photograph with the name of Mr. Graves, who did not execute such a photograph." As to the artist's proofs being worth only a few shillings, why they are at a fabulous premium.

As to the assignment in the "Black Brunswicker," and its publication dates altered, &c., Mr. Cunnington is also in a fog. As to "different dates in the plate," this has nothing whatever to do with the validity of a copyright under 25 and 26 Vic., cap. 68. The copyright was assigned by the author to Messrs. Graves and Macqueen and Co., and passed from the latter firm to its present owner by a deed duly stamped and signed by the four liquidators of the company, and registered in due course by its present owner at Stationers' Hall. I admit the *publication line* is important as to its truthfulness, &c., under the 8th Geo. II. and other Engraving Acts. All my new engravings I publish under the Act 25 and 26 Vic., cap. 68. I never put any *publication line*; it is not required. It is simply necessary to have an assignment in writing from the author, and register; and every subsequent assignment must be registered. If this be done, no counsel or appealing can get over this simple Act. I am surprised that any person should be so simple as to keep mixing up old Acts with the new one.—Yours respectfully, B. Brooks.

17, *Great Portland Street.*

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[*] We were under the impression that a copyright existed in the design. If not, the conviction on the ground that the name was present seems a blunder.—Ed.

ARTIST'S PROOFS AND PIRACY.

SIR,—Your correspondent, Mr. Cunnington, is at sea about the artist's proofs of fine engravings being of "no value." If he has got any artist's proofs of "Stag at Bay"—the very plate which he says "is carted off to Whitechapel"—he can get double the published price for them.

Is he aware that every artist's proof bears the Printseller's Association stamp (like the Goldsmith's stamp on plate)? It matters not how common a re-engraved plate gets: the original proofs always keep up their value, like the original edition of a standard book.

I do not understand copyright, but if Mr. Cunnington understands that law no better than he does the value of original artist's proofs, I do not think much of his judgment. The original artist's proofs of "Bolton Abbey" are worth, in the trade, eighty guineas, and only cost ten guineas, yet a worn-out, mock Jew proof is not worth as many pence. As copyrights expire they become public property, and are re-engraved in all shapes and sizes, yet the original edition keeps its value.—Yours, &c.,

Pall Mall, Nov. 24th, 1870. BOOK WORM.

PIRACY.

SIR,—I read with great interest the candid letter of Mr. Brooks which appeared in your last week's impression, and I could not help feeling ashamed at the position in which the photographic profession is placed by those parties who stoop to such contemptible meanness as has been lately disclosed in our courts of law. I hope that our judges, instead of being more lenient in the future, will punish more severely what must appear to any right thinking mind an aggravated theft.

I do not allude to the particular case mentioned by Mr. Brooks, but rather to the systematic piracy which has been in operation for some years back, and which seems to be on the increase, in spite of the severity with which it has been treated.

But while lamenting the fact that there are photographers, so-called, who prostitute for their own selfish ends one of the noblest arts of the present day, we must not forget that there are also buyers who blur their moral feelings by purchasing from these men.

Only to-night I was visiting a family in my near neighbourhood, and was there shown two large photographs, which at once struck me as being contraband. They were very badly mounted, and entirely owed their value and beauty to the fact that they were evidently transcripts from two splendid engravings. I looked for the name of the publisher, but it was cut off. Both pictures represent the interior of a log cabin: in the one the figures are shown as listening to the father reading; in the other, the family seem silent and sad, the hand of deadly disease having been laid upon one of its members.

Should either of the London publishers see this letter, and, recognizing the pictures, wish to know where they are to be procured, I can only say, in Manchester.—I am, sir, your obedient servant, NORTH BRITON.

November 22nd, 1870.

REPRODUCING NEGATIVES.—FIXING PENCIL DRAWINGS.

MY DEAR SIR,—I am glad to find that the examples you have seen of reproduced negatives by the wet process in the camera, by Mr. Pickering, are considered "amongst the very best of the kind you have seen." I have no doubt in my own mind that perfect reproductions of negatives can be produced in this way. The process is perfectly simple, as I pointed out in the first volume of the NEWS; and it seems strange that more attention has not been given to the subject. Everything, as you remark, depends upon "care and nicety of conditions." Unless the transparent positive is perfect, of course, the resultant negative must be inferior to the original. I think that when a negative would leave much white, or nearly white, in the proofs, the corresponding portions in the transparent positive being clear glass, too much direct light would be admitted, and the negative would be inferior. With a negative of that kind, I think it would be better to make the transparent positive small, so that there might be as small a portion of clear glass as possible.

I noticed in the NEWS, some time since, a method of fixing pencil and chalk drawings by means of milk and water. I used the method more than forty years ago. I should recommend the water to be lukewarm, and when the drawing is small I think it is better to dash the milk and water over the drawing from a jug, hanging the drawing up to dry away from a fire. For large drawings a tea tray answers, and the drawing should be floated as in sensitizing a sheet of paper.

I wish I knew of any method of fixing drawings in soft chalk; but the slightest moisture destroys the colours.—Believe me, yours very truly, THOMAS BARRETT.

Mead Vale, Red Hill, November 21st, 1870.

Talk in the Studio.

LANDSCAPE BACKGROUNDS TO PORTRAITS AT THE EXHIBITION.—Our attention has been called to the manifest error in the notice reprinted in the *Daily Telegraph* in our last, in which landscape backgrounds to portraits are mentioned as contributed by Mr. Warwick Brookes. The allusion is evidently intended to apply to the fine examples of this kind of work contributed by Mr. B. J. Edwards, which hang beside the charming portrait studies of Mr. Brookes.

TUNICARE TO PREVENT FILMS SPLITTING.—A correspondent informs us that he has found tunicare a useful application to the finished negative after fixing and washing, to prevent the film splitting in drying. The manufacturer asks us to inform "Oxoniensis," and others interested, that he is just bringing out cheap sample bottles of tunicare for the accommodation of those who wish to try his preparation.

PHOTOGRAPHY FOR CORRESPONDENCE.—The idea of sending microscopic photographs of letters by carrier pigeons, much talked about, appears to have been carried out somewhat tardily. A correspondent of the *Standard*, writing from Paris by balloon post, says, under date of the 13th:—"So late as yesterday a balloon was sent to the provinces with a peculiar photographic apparatus to enable answers to be sent back from distant friends under the wings of the carrier pigeons. The system cannot come into operation before ten days, which is hardly proof that the relief of the city is looked upon by the postal authorites as imminent.

RAPID PLATES AND MOONLIGHT PICTURES.—Mr. H. T. Anthony says, in the *Bulletin*:—"In reading about the moonlight negatives of Mr. Ogier and Messrs. Robinson and Cherrill, we revive the recollections of a very sensitive process which we happened to discover a long time ago. Not to recount what led to the experiment, I will merely say that that experiment was, adding pyrogallic acid to the negative bath. This sort of experiment may look rather wild, but I had sufficient reason to satisfy me in making it. Not having anything to guide me as to the quantity that might be added, I at first put in an excess. The consequence was, that the plate would not develop by the appplication of the iron developer in the dark. By admitting diffused light to the plate while the iron developer was acting, the picture flashed out immediately, but was excessively thin, and, in fixing, was completely dissolved from the film. As the bath in this condition was useless, I concluded to let it stand until all the action that could be exerted by the pyrogallic acid upon the silver solution in the dark should be completed. The bath stood rigorously secluded from actinic light for at least one month. Upon trying it again, I obtained nothing but foggy pictures—that is, the development would commence fairly, but would finish by fogging badly all over, so that the negatives were perfectly useless. As this fogging appeared to me to be due to the action of diffused light over the plate, I determined to test it by working a plate entirely in the dark. The result was a beautiful, fully developed, clear negative, with an excessively short exposure. The light in which I had been working was such that the ordinary process of making negatives could be conducted in it without the slightest trace of fog; and yet, as I afterwards found by experiment, an instantaneous exposure of the sensitive plate to this light caused a fog in developing. The difficulty of working so sensitive a process in the ordinary operations of photography seemed to render it comparatively useless, and I have never had time to revise my experiments or to attempt to modify the sensitiveness of the compound bath. Now that photographers profess to work by moonlight, there seems to be a chance for the use of an extra sensitive process. I will merely state, further, that (upon recollection) I did make a modification of this bath subsequently, but did not make use of it to any extent, by using gallic acid instead of pyrogallic. This worked very well, but was not nearly so sensitive."

ACETATE OF IRON.—Mr. H. T. Anthony says:—"We have had occasion to use acetate of soda in the ordinary iron developer, and with good results. In our case it was only used in taking instantaneous pictures. The acetate we employed was rather a combination of the acetate and carbonate, there being a slight excess of the carbonate, and the solution evaporated to dryness. By using about 1½ grains of this to the ounce of ordinary developer, the taking of instantaneous negatives was very much facilitated."

Removing Silver Stains.—Mr. Griswold says, in the *Photographic Bulletin* :—"I give you a little formula, which I have never seen recommended, for freeing the hands from silver stains, which, besides being effective, is perfectly innocent :—

Con. ammonia	½ ounce
Alcohol	3½ ounces.

Add iodine to the above solution as often as it becomes clear, until it retains a sherry-wine or amber colour. Apply the solution to the stains with a stiff brush, repeating the operation a few times, when it is only necessary to wash it off with soap and water. This is the most pleasant remedy I have ever tried, as it leaves the hands free from harshness, and acts as a healing agent where they are in the least ulcerated from the use of cyanide or other similar poisons. This remedy smarts pretty savagely when it comes in contact with the raw, but one feels splendidly when the pain is over."

Chloralum.—Professor Gamgee has just introduced to public notice a new antiseptic agent which may in some cases be found useful to our readers. It is a chlorine alum, and is alleged to possess some of the properties of both these substances. The *Mechanics' Magazine*, speaking of it, says:—"This substance, which has been named chloralum, is a salt, and for all practical purposes it may be viewed as the analogue of common salt. It is a hydrated chloride of aluminium, and has the active properties of chlorine or of hydrochloric acid, without any causticity, odour, or any other hurtful property. Chloralum has a sweetish astringent or aluminous taste, and resembles, as an antiseptic, the solution of chloride of zinc, which has been extensively used, although its poisonous nature has led to serious accidents. But the great peculiarity of chloralum is that, although it is as powerful as carbolic acid, it can be taken like common salt. Indeed, medical men are now using it largely, and it is an invaluable agent as a gargle in cases of sore throat, diphtheria, scarlet fever, or whooping cough. . . . It must be admitted that an absolutely harmless disinfecting agent which can with impunity be washed over the body or swallowed must prove a great boon to all. . . . When a mass of putrid matter has been treated with chloralum, its decomposition ends."

Heliotype in Rome.—A letter from Mr. Macpherson, o Rome, states that the last act of the Pope having any relation to the fine arts was the granting of a patent for Mr. Ernest Edwards's heliotype process, this having been done whilst the Italian armies were actually under the walls, and the place in a state of siege.

Post Cards and Photography.—Referring to a remark in a recent issue, to the effect that, as nothing might be attached to post cards, they could not be used to transmit photographs, we have received from Mr. E. Edwards an example of a post card with a heliotypic impression printed on the part designed for writing. Mr. Edwards adds, that it is scarcely necessary to say that his process shall never be used for any form of photography of an offensive character, to which allusion has been made as a possible objectionable use to which the cards might be put.

To Correspondents.

W. G. S.—From the appearance of the marks, and your description of the circumstances, it appears probable that the stains are due to splashes of nitrate of silver reaching the sensitive surface whilst it is in the camera back. If an accumulation of free nitrate has drained into the back, the moving up of the slide will often cause a splash on the plate, which, running down the plate during exposure, would cause such markings as those of which you complain. If they were due to the collodion or silver bath they would be in some degree visible when the plate leaves the bath, but you see nothing of them at that time. To ascertain certainly, prepare a plate, expose briefly to light, and develop without placing it in the camera back. If that be clean, you will at once see the source of the error; if the stains still appear, write again.

North of Scotland.—It is quite impossible to state whether the sample of papyroxyline is or is not Liesegang's. From accident or oversight in its preparation it is certainly not a good sample. The dealer from whom you had it is a respectable man, but it is possible to supply an article like pyroxyline or papyroxyline of imperfect character without any certain knowledge of it, as it can only be ascertained by trying, which is not the dealer's business. A small portion out of a batch might easily be bad, and yet escape the manufacturer's attention. The best plan with everything of that kind is, first to try a small quantity. If you had made one or two ounces of collodion instead of eight you would have wasted less of the solvents. We have not had time to test it photographically, but an examination of its physical quality and its mode of burning shows that the sample is imperfect, the effect of the acids having apparently been incomplete.

Z.—We do not know what heliotypic or photo-lithographic processes are patented in France. Whether or not Mr. Edwards has a patent in France we do not know. The principle of photo-collographic processes is not patented; but most of the methods which have been worked out to a practically successful issue are either patented or kept secret. For amateur purposes you cannot do better than try the process of Mr. Edwards, details of which we published some time ago. A licence will not be required except for its commercial use.

G. A. F.—As we answered a correspondent in our last, the writer of the paragraph we quoted was evidently confounding two processes, the photo-engraving process and the anastatic process, both of which are employed in reproducing and multiplying maps in the Royal Printing Office at Berlin. Lieut. Waterhouse gives a detailed account of the working of Appel's anastatic process in his Report on Cartography and its Photographic Applications, issued from the Surveyor-General's Office in Calcutta. We are uncertain where the Report can be obtained in this country; but probably at the Indian Office or Museum.

Senrab Egroeg.—Of course, when you add two grains extra of a bromide to collodion, for use in a dry process, it should dissolve, else it is useless adding it. It is not always an easy operation to secure perfect solution on making such addition. As, however, bromide of cadmium is soluble in greater proportion than you require, you ought to be able with care to dissolve it, unless the sample is defective. Place the bromide in a test tube, and add about a drachm of the collodion to it, and with a glass rod mix it into a paste, then add this to the collodion and agitate at intervals until it is dissolved. 2. The addition of bromide of cadmium will improve the keeping qualities of collodion; but it will not make it keep indefinitely. That you mention as having become dark in colour and powdery in film, after keeping for a year and a-half, is doubtful for dry-plate work. Try it first for wet. 3. We do not know whether anyone has tried tunicare as preliminary coating for dry plates, but see no reason why not. Its application to prevent films splitting in drying will be useful.

J. Andrews.—Thanks. The name is correctly given in the catalogue, and, of course, we know it correctly.

W. Sturgeon.—After floating paper on a solution of gelatine, it is better to allow it to dry before immersing in a solution of alum to render it insoluble. The strength of alum solution is not important—from thirty to forty grains per ounce. Immerse, and leave for five or ten minutes, and then transfer to clean water to rinse.

C. C. F.—The plan generally seems good; but we should prefer two or three feet more of glass if we were building. The amount you name, ten feet, would do well enough in fine weather, but on dull days the facility for more will be found desirable. If at any time you are troubled with direct sunlight, a blind of thin muslin or of tracing cloth will intercept direct rays without stopping out much light.

Geo. Avery.—We have had no experience of the still described, but it seems simple and efficient. There is another still more simple described in our present number. According to English law it is, we believe, illegal to possess a still at all without the proper authority. How far you may safely use a kettle with a long spout for securing distilled water it is impossible to say, and we really cannot advise you on the subject. We have known persons use such things, and we fear that if we needed to prepare distilled water we should not hesitate to use such an appliance. 2. There is a little confusion in the paragraph, but the point to be enforced is, that it is not the picture or image which is affected by subsequent action of light, but that part of the sensitive surface upon which there is no image, and which has not been acted upon by light. The question how far a developed and unfixed negative would be affected by light depends on circumstances. If the collodion were simply iodized, no apparent change would take place, as iodide of silver does not yield a visible image under the simple action of light. A film containing bromo-iodide of silver would gradually darken somewhat in the deep shadows, as bromide of silver is sensitive to the direct action of light.

Dr. Vogel.—Received. Thanks.

Dr. Liesegang.—Received. Thanks.

W. W.—The communications received. Thanks. Will you kindly forward your name to be appended?

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

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CONTENTS.

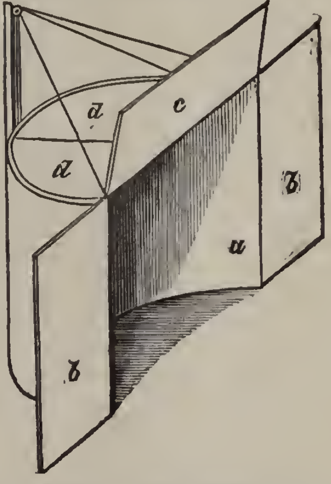
PAGE
M. Adam-Salomon's System of Lighting.—An Alcove Background 565
Photography and the Forthcoming Eclipse Expedition 566
The Exhibition of Photographs 567
American Correspondence 567
Photography in Germany. By Dr. Vogel 569
Photography and the Pigeon Post 570
The Ethics of Popular Exhibitions. By W. T. Bovey 570
Some Hints on Cleaning Plates. By Vulpes 572
On the Iodide of Silver. By Dr. J. Schnauss 572
Correspondence.—Copyright Piracies—Piracy and Copyright—Negative Films Cracking—Tunicare Again 574
Talk in the Studio 575
To Correspondents 576

M. ADAM-SALOMON'S SYSTEM OF LIGHTING.—AN ALCOVE BACKGROUND.*

The system of lighting we are about to describe was designed by M. Adam-Salomon, and has during the last two years been constantly in use in his studio in Paris, where he has found it a complete success. It entirely dispenses with the necessity for blinds or curtains, whilst it places the control of the light and shade immediately in the hands of the photographer, to be modified in a moment in accordance with his will. The lighting arrangement is combined with a curved or alcove background, the light and shade upon which can be as easily modified as that on the figure. More perfect lighting, and more command over all the results of lighting, are obtained, we are assured, by this system than can be obtained in almost any studio of ordinary construction. We are indebted to M. Adam-Salomon, not simply for the fullest details of the design and management of the combined arrangement, but also complete working model, by the manipulation of which he accompanied his description, making the matter clear to us in its most comprehensive details. We trust that we shall be equally fortunate in placing it before our readers.

The structure consists of a semi-circular background, with canopy and wings capable of ready arrangement, so as to control the light on either the model or the background. Perhaps we shall best make the character of the combination clear if, before proceeding with further description, we subjoin a diagram showing the general form.

It consists of a curved background, *a*, about eight feet high and ten feet wide at the curve; that is, the diameter of the circle of which the curve of the background forms half is ten feet, and the radius, of course, five feet. Hinged to each side of the background are movable wings, *b*, about four feet wide, and a canopy, *c*, of a similar character and width, is hinged to the top in front. Behind this projecting front canopy is a covering or canopy to the curved part of the background; this consists of two halves, *d* and *d*, hinged in the centre. Attached to the background at the back is a rod, *e*, terminating in a series of loops or pulleys. Through these pass cords which are attached to the canopies *c* and *d*. The cords are all brought to a position behind or at the side of the background, where the operator can readily manipulate them, each cord having a counterpoise attached, so as to maintain the canopy in any position into which it is pulled by the manipulator. The wings and canopy *b* and *c* are light frames covered with thin, transparent white muslin, transmitting some light, but arresting or breaking up direct rays of sunlight. At each end of the canopy, *c*, is attached a piece of thin muslin, which we have not figured, as it would have somewhat confused the diagram. It is the same width as the wings, over the top of each of which a piece hangs, to maintain the continuity between the wing-screens and the projecting canopy. The canopies *d* are also light frames covered with thick white calico, transmitting very little light. The background rests on three feet, one at each side and one in the middle; these each project behind about eight inches, to give firmness and steadiness; each foot has a large castor, to permit the whole to be wheeled round easily into any position. The wings are hinged so as to hang an inch or two from the ground, so as to be easily moved backwards and forwards. The background is papered, in that used by M. Adam-Salomon, with salmon-coloured printing-paper, which is found to answer well. Grey or brown, or other neutral



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* Our readers will probably remember that we received a note from Mons Adam-Salomon just before our Year-Book went to press, regretting that he had not had time to prepare a description of a new system of lighting, which he had promised for insertion in our annual, but expressing a hope that he should shortly be able to give the details in the Photographic News. Many pressing engagements and indifferent health have combined to delay the matter until now. We subjoin a note received from M. Adam-Salomon with the model to which we refer in our article, in advance of his visit for the purpose of explaining and demonstrating its practical advantages. The note is as follows:—

Cher Monsieur,—Vous avez eu l'obligeance de publier, l'année dernière, quelques lignes de moi, relatives à un nouveau système d'éclairage, que j'ai imaginé dans le but de supprimer les rideau des ateliers de photographie. Je disais alors, que ces tentures souvent mal disposées, étaient à mon avis, l'une des causes principales d'un résultat mediocre dans l'exécution du portrait.

Le procédé, dont j'ai l'honneur de vous entretenir, cher Monsieur, et que j'ai expérimenté dans mon atelier de Paris, m'a donné, par ses bons résultats, l'espérance qu'il pourrait intéresser les photographes, au point de vue du progrès dans la distribution de la lumière.

Mon sejour momentané à Londres, me procurera le plaisir de vous soumettre d'une manière pratique ce procédé. Il vous sera plus facile alors, aprés en avoir observé les effets, d'en donner une description plus exacte et plus compréhensible, que je ne saurais le faire moi-même.

Recevez, cher Monsieur, l'assurance de ma profonde sympathie, et de mon bien entier dévouement.—Notre affectionné serviteur, Adam-Salomon.

colour, would, of course, answer. The size and proportions might also be modified to suit circumstances, but we are describing the proportions and character of that which has been found satisfactory, by the designer, in actual use.

It will be seen that we have here a kind of alcove or niche, eight feet high, and about nine feet from back to front. It is open in front, but capable of being nearly closed, a soft light, however, being admitted through the wings and front canopy. To illustrate its working, we will suppose it to be placed in an ordinary oblong studio, with glass roof and both sides, the ends merely being opaque. The sitter is placed in the centre of the circle of which the background curve forms half, just under the hinged part of the front canopy, which we will presume is down, and the wings just so much closed as to form a rectangular opening to the alcove. He is now sheltered from any direct illumination, a soft, diffused light surrounding the figure. A slight elevation of the canopy, *c*, at once admits a portion of direct top light, the amount and effect of which can be regulated accurately without the operator needing to stir from the spot at which he watches the effect of light and shade on his model. In like manner the proportion of direct side light, at either side, is modified in any desired degree by the opening or closing of the wings, *b b*. Still more than this can be done in shutting off volumes of direct light from the model, who, in all cases, remains quite stationary, retaining the desirable position first given to him. Where the flood of light reaching the sitter is great, and the mere use of the wings is insufficient to control it, then the whole framework is made to move round the sitter as a centre—which, running on the large castors to which we have referred, is easily effected—and the sitter is entirely screened from the light on one side or the other, as may be desired. If direct light be shining on the sitter, it can be quite cut off in this way; or it can be utilized by interposing one of the side wings, which, being covered with thin muslin, will filter, as it were, and distribute the light, without quite intercepting it. It will be seen, on a little examination, that almost any amount of light, the most limited and the most voluminous, can be allowed to reach the sitter, and almost any part of him, the means of controlling its direction and impact on the sitter being the most simple and easily managed.

The sitter being placed in position, and lighted, it will be seen that the light on the niche-like background will necessarily give some degree of gradation of light and shade, which will give the figure relief, and indicate space around it. But there is another considerable power to be used for the purpose, to which we have not yet referred. The canopy, *d d*, is, as we have said, hinged in the middle, and opens from the outside. If both sides were open, the background would be perfectly illuminated from the top, and the effect of light and shade obtained from the front would be very much neutralized. If both sides were closed, as represented in the figure, the background would be dark, but with a broad effect of light and shade, produced by the dominant light in advance of it. But if special effects of light and shade are desired on the background, the amount of light, and its direction, falling upon the background, can be governed without in any degree interfering with the lighting of the figure. Either side of the canopy, *d d*, can be opened to admit just such portion of light as may be found best to secure relief to the figure and complete the balance of light and shade in the picture.

When a full-length picture is required, the termination of perspective lines, as will readily be seen, especially if the carpet have a definite pattern, would appear unpleasing, giving a curved line across the plate. To remove this unsatisfactory effect, a movable dado may be employed, which is placed behind the sitter within the curve of the background. This answers satisfactorily. It need not be high, or represent anything more pronounced than an ordinary skirting board.

The construction of this alcove background, with its light-controlling arrangements, need not be difficult or expensive. That which M. Adam-Salomon has had in satisfactory use cost a sum equivalent to about three pounds sterling. The amount may be more or less, we apprehend, depending much upon the mode of going about the work; but if made in the most complete and costly manner, it appears to us that it must be, in many cases, an absolute economy, when it is considered what may be saved in the construction, arrangement, and management of the studio. The glass-room may be of the simplest construction. It is only necessary that it should admit plenty of light, and protect from weather. The alcove described practically consists of a small studio in itself, with the fullest facility for controlling the lighting. M. Adam-Salomon prefers that, even with such an arrangement, the skylight should be of ground or stippled glass; but for the rest it is only necessary to have plenty of light at both sides, through clear glass, and from almost any aspect, its amount and direction being so thoroughly under control. The advantages of the arrangement will, we apprehend, be tolerably clear to most readers, and if any doubt existed, the complete satisfaction of such a master of lighting as M. Adam-Salomon would be sufficient authority for the practical value of the system.

A few brief hints on the construction of the combination may be useful. The formation of the curved background itself is the chief consideration. M. Salomon's consists, first, of two curved pieces of wood to form the framework. These are placed, one for the bottom and one for the top, at the proper distance apart, and a series of thin narrow planks, not more than three or four inches wide, are fastened to the curved pieces of wood, the planks being fastened to each other by means of a groove and tongue. When complete, the little angles or irregularities in the curve are taken off with a plane. Probably, if well-made laths, something like those used in Venetian blinds, were employed, a more perfect and regular curve might be more easily obtained. In such case, the general framework would probably require to be made a little more firm or rigid. M. Adam-Salomon found it desirable to increase the rigidity—seeing that the arrangement is often wheeled rapidly about—by means of a binding of iron running round the top and bottom of the curve. The background may, of course, be painted, or sanded, or treated in any matter to suit the taste. M. Salomon finds simple papering with printing-paper answers every purpose, a piece of salmon-coloured paper neatly lining the curved screen yielding every effect in the finished picture, from the highest grey to the deepest, depending upon the amount of light suffered to reach the inner portion of the niche.

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PHOTOGRAPHY AND THE FORTHCOMING ECLIPSE EXPEDITION.

The requisite aid having been secured from government for carrying out the necessary observations of the forthcoming eclipse, active effort is being made, we understand, to utilize the short time available for preparations. We may fairly assume that with the successful example of Prussia and America for imitation in relation to the photographic arrangements, the fiasco of 1868 will not be repeated. To avert any risk of the matter being overlooked, Col. Wortley has addressed the following letter to the *Times*, in the columns of which it appeared on Tuesday:—

"Sir,—The great importance of the forthcoming eclipse, and the length of time that will elapse before another permitting such favourable observation will occur, make me crave sufficient of your space to urge that the photographic department should be better managed this time than has previously been the case. Of no previous eclipse have photographic records been furnished in any way comparable with what ought to and could be done, and I would earnestly advise the Astronomical Society to call to their councils one or more of the numerous body of photographers who are fully capable of giving them the necessary information, and so enable them to produce something worthy of the present state of photographic science.—I am, &c.,

"H. STUART WORTLEY, Lieutenant-Colonel.
"*Carlton Club, November* 28."

We venture to suggest that if Col. Wortley himself could be induced to take part in the undertaking, no one more fitted in every way could be entrusted with such important work. In any case, we have reason to believe that the matter is receiving attention. Mr. A. Brothers, of Manchester, whose name is known as worthily associated with both astronomy and photography, is actively making his preparations; Lieut. Abney, of the Royal Engineers, a very able photographer, will also, we believe, assist in the work. Mr. Spiller, has, we regret to say, been obliged to decline an application to take charge of one expedition. As there will be three observing parties using photography—one at Cadiz, one at Gibraltar, and one in Sicily—it is important that suitable men should be found quickly, as the expeditions start, we believe, on Monday.

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THE EXHIBITION OF PHOTOGRAPHS.

LANDSCAPES—*continued.*

WORTHILY occupying the largest space and the most prominent position in the room, are the seascapes of Col. Stuart Wortley. These are of still larger size than most of the pictures we have already noticed, and have different aims. These chiefly represent night scenes, and effects which are not only unusual in photography, but which, from their wild grandeur, are also unusual in nature. We have before said that in the startling contrasts of light and shade there seemed some tendency to exaggeration of effect; but that much said once for all, the singularly bold massiveness and force of the pictures must arrest everyone's attention. "Gathering Vraic" (120) is a very effective picture, in which the foreground figures are introduced and arranged with consummate skill. "On the Shore" (114) is another example in which the arrangement of figures in the foreground is most happy; but both these suffer somewhat from the force of the contrasts in the sky, which detracts a little from the solidity of the foreground. The same fact is in some degree noticeable in "Evening" (115), in which, however, nothing can exceed the pictorial excellence of the management of the cattle in the foreground. Perhaps the best examples of fine chiaroscuro and breadth is a picture with the following line for its title—"Its clouds are angel's wings" (118); and, for grandeur of force and action, "Break! Break! Break!" (121), is singularly fine. The whole of Col. Wortley's pictures are pitched in a high key; there is nothing petty or ignoble about them. If the vivid rendering of grand masses of cloud in some of them is sufficient to suggest want of solidity in foreground objects, the fault is one of a kind most instructive to photographers. A common fault of photographic clouds has been their want of form and character, which has represented flatness and want of atmosphere, instead of vapoury bodies with length, breadth, and thickness floating in space. That this kind of rendering is unnecessary is effectively shown by the whole of the fine series.

The half dozen landscapes contributed by F. and W. Bedford are charming examples of all the qualities which have made the name of Mr. Francis Bedford and the highest type of photographic landscape indissolubly associated. Warwick Castle, Raglan Castle, and Tintern Abbey all admirably illustrate the charm of Mr. Bedford's work, the choice of position and light, the landscape charm added to the architectural interest, combination of brilliancy, delicacy, and atmosphere, all tending to produce a rare feeling of perfection. The small photographs of Scottish scenery by Mr. Valentine, of Dundee, have exceedingly fine qualities. Amongst the very finest landscapes present are the Cornish scenes of Mr. W. Brooks. Singularly brilliant, yet soft, detailed, and rich, there is a heavy moving effect about the foliage, about the water, and pervading the pictures generally. They are all fine, but "Land's End, Cornwall" (253), especially pleases us. The architectural subjects by the photographic staff of Royal Engineers at Chatham are very excellent. Some capital examples of the gum-gallic process are exhibited by Mr. Matthew Whiting and by Mr. W. J. A. Grant; besides the technical interest as examples of this process, they have excellent pictorial qualities. Amongst some very fine examples of the collodio-albumen process by Mr. Giberne, one of Fountains Abbey, with a view of the brook in front, is quite a gem. Lieut. W. de W. Abney contributes several landscapes of scenes in the Pyrennees, which, besides possessing perfect technical qualities, display very fine artistic feeling. Captain Mortimer's "Saltwood Castle," in differing views, are very fine.

Mr. Cocking's examples of artistic printing, which he styles photo-tint, are exceedingly charming in landscape. A view of Avon, and another of Leamington Church, treated in this way, please us exceedingly. Photographic landscapes, as a rule, are more suitable for the portfolio than for framing as pictures. These, however, would grace any wall. Mr. R. Mitchell's view at "Black-coal" is another example in which, by skilful treatment, a commonplace subject becomes a very fine picture.

The eastern views by Capt. Lyon—chiefly of scenes in the Neilgherry Hills—are in every way excellent. Every form of interest is united in the large series here exhibited. The architectural subjects are admirably rendered, so that nothing is lost. The landscapes are singularly picturesque, and in technical qualities the pictures are equal to the best produced in this country. The landscapes exhibited by Mr. Vernon Heath possess that peculiar crispness and delicacy which have always characterized his work. The Oak in Burnham Beeches, and the Beech from the same wood, are magnificent examples of the grand old monarchs of the forest which have so often furnished studies for the painter and photographer. The views of Strasburg after the bombardment, by Mr. J. G. Livesay, are excellent photographs, and full of interest. Mr. Dunmore's garden landscapes possess great vigour. Mr. F. G. Lloyd's studies of ferns and other subjects are very good. Mr. F. Hudson's views in the Isle of Wight are very fine. Mr. Baynham Jones has a picturesque little view of a bridge near Mallow, and some other good examples by tannin and malt processes. Mr. Alfieri has some very artistic little landscapes. A group of cattle (305), by A. Nicholls, is very praiseworthy work. Mr. Fisk's landscapes, Mr. Fernely's views, Mr. Potter's studies of trees, and Mr. Whitfield's Worcestershire scenery, have much excellence. E. Fox, H. Gregson, F. S. Schwabe, H. B. Wilson, F. E. Currey, G. S. Penny, Capt. H. White, W. Wainwright, A. F. Smith, and N. Syrus, all contribute good work in this kind.

Of photographs not strictly belonging to landscape photography, but analogous to it in many respects, we have many interesting examples; such, for instance, as Mr. Clarke's records of boiler explosions, the Wimbledon sketches by Mr. Hemery and by Wilson and Morgan, the conservatory studies by Mr. F. G. Lloyd, and the records of artillery experiments from the War Department at Woolwich.

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AMERICAN CORRESPONDENCE.

MULTIPLYING NEGATIVES.—THE ACCELERATION OF EXPOSURE.—PHOTOGRAPHY AS AN AID TO GEOLOGY.

Multiplying Negatives.—I have read with a great deal of interest your remarks in the NEWS of Oct. 28th, on the reproduction of negatives from prints, and I was surprised to learn that such excellent results could be obtained as you describe. I think, however, that that excellence was due in a great measure to the class of subjects with which the experiments were made. All those who have had it to do know that there is nothing more detestable to make a reproduction from than a photographic paper print. The rugosities of the paper are made repulsively plain in the copy, making it appear grey and coarse; and generally a copy from a print is of little account unless it be worked up in colour or ink. As you will understand, I am speaking specially of portraits; and, as you have said, such work will put the method you have detailed to the "crucial test," a test I feel sure it would hardly bear. A great many copies are made in this country of foreign stereoscopic views by the usual method of negative making. Some of them are fair; but no one, even the inexperienced, can fail to detect the fact that "something is the matter with them," they know not what. And I think it would be a very bad thing indeed if good negatives could be made by any method from paper prints. It might be useful in isolated cases—such as you have described as having occurred at the Royal Arsenal; but if it were possible to do such a thing well, I assure you it would limit the sale of European views in America to the most carefully selected sample lots, while now Wilson, and Blanchard, and England, and Bedford, and Good, send them here in thousands and tens of thousands. The true way for us to guard against loss from the destruction of valuable negatives is, to *multiply the negatives* before they become deteriorated, and store the duplicates away for emergencies, or make good positives from them for negative making. This can be done very readily by a method which I shall describe below; and, as a proof, I enclose you a print made from a negative, so to speak. True, it is a landscape; but I think you will agree that it has all the appearance of being from the original negative; and I am quite sure that the same method, in good hands, may be applied to portraiture. The process is one that has been worked out by H. J. Newton, Esq., an indefatigable advocate of the tea dry process, and now a warm friend of that invaluable discovery, collodio-chloride. Here is the process in detail, as he has communicated it to me:—

"Let photographers provide themselves with one or more positives of their valuable negatives, and they are insured, to a great extent, against loss from accidents that may happen to them. The first thing to be provided with is a suitable collodio-chloride. After repeated experiments, I determined upon the following formula as the best for my purpose:—

Alcohol and ether ...	... equal parts
Chloride of magnesium ...	... 4 grains
Citric acid	... 4 ,,
Nitrate of silver, to the ounce	... 12 ,,

These proportions appeared to be the best, but there was always a variation in the working of this compound, depending upon the manner of its compounding. The best results were produced in the following way:—

"Dissolve in 1 ounce of alcohol 24 grains chloride of magnesium, then add 36 grains of intense cotton; next pulverize in a mortar 24 grains citric acid with 72 grains nitrate of silver; pulverize to an impalpable powder, and then add 2 ounces alcohol; continue to agitate until the alcohol is completely saturated; now add to the solution of chloride 3 ounces ether, shake well for two or three minutes, and pour the whole slowly into the mortar, stirring briskly while doing so. As soon as the vial is empty pour the whole back into it. It can then be filtered, and is ready for use. When prepared in this way it is much more sensitive than when prepared otherwise, and prints with a deeper and richer colour, giving, therefore, stronger and more vigorous prints. The glass is coated with albumen, prepared by dissolving the white of 1 egg in 6 ounces of water and 10 drops of ammonia, filtered, and flowed on when the glass is wet. When thoroughly dry, flow with the collodio-chloride, and dry with artificial heat. When dry, set it on one side, and warm the negative to about 120°, or to about the same temperature of the prepared collodio-chloride plate; put the negative in the printing-frame, and, when cooled to about 100°, or to blood heat, put the prepared plate over the negative in the printing-frame, and expose to sunlight from fifteen to twenty minutes for a thin negative. By opening one half the frame and looking through, you will be able to tell, with a little experience, when it is printed deep enough. The obstacle in the way which seemed the most insurmountable was pinholes in the deep shadows. To call them pinholes gives but a faint conception of the reality; they would, in long printing, literally form a sieve. I attributed the cause to vapour confined between the two glasses; they, having been put together cold, and placed in the sunlight, became in a short time very hot. I am far from sure that such a theory is correct, but I am sure that after heating the negative as described I had much less trouble. Yet care should be taken that the negative does not get very hot in the sunlight.

"When the print has become of sufficient intensity, remove from the frame and wash for a short time under the tap, and fix in the old hypo and gold toning bath; this bath should be made at least twenty-four hours before using, and quite weak with hypo. The older this bath is the better it works.

"If you find, on removing the print from the frame, that it is not printed deep enough, it can be strengthened with pyrogallic acid and silver, the same as a negative. This treatment with pyrogallic acid will give you a much richer tone than you would otherwise get; it will require a much longer time, however, in the fixing and toning bath, an , instead of diminishing in strength, will increase in intensity. When toned to suit your taste, there only remains, to complete the positive, washing and drying. To make a negative from the positive so obtained, proceed in precisely the same manner as already described for a positive. The positive should be varnished before placing it in the sunlight in contact with a prepared collodio-chloride plate, or the positive will, in a short time, almost entirely disappear. This phenomenon, to me, was most extraordinary, and I am not yet satisfied what is the exact cause. The coat of varnish, however, was an effectual preventive, which shows that the action was one of contact between the prepared surfaces caused by the action of sunlight—or, rather, incited to action by the solar rays.

"Positives made in this way are of surpassing beauty, containing all the fine detail of the negative, soft and brilliant, and of a tone I have never seen equalled."

The best kind of printing frame for this purpose is one similar to, or the same as, those used for printing pictures on porcelain, for when using such, the printing may be watched in its progress without danger of displacing either glass.

The Acceleration of Exposures.—A great deal is being said and written about the acceleration of exposures just now, and it is assuredly a subject well worth a great deal of experiment and research; yet I think, with all due respect to some of my "grave and potent seignors," that much is being done that will prove of no avail. If we can shorten the exposure of the sensitive plate in the camera, much will be accomplished; but if we do that at the expense of some other good quality, then I question if a shorter exposure is of enough importance to compensate for any such loss, especially for the loss of brilliancy. I have not time, or the disposition, however, to go into details. The discussion is in excellent hands. I have always been an advocate of generous exposure where it could be had, and if it could not be had at one time, to try again, if possible. Still, I will do no harm in stating an idea that was ventilated at the last meeting of the German Photographic Society in New York. The present subject was brought up and discussed at length, the general impression being that the use of white, or red, or black cardboard in the camera was of no particular avail; but if a linen cloth be spread on the floor between the camera and the sitter, it would accomplish the much desired end without sacrificing any other good quality. This seems quite feasible, and may be easily tried. I have not yet tried it, but visiting the model studio of Mr. Kurtz, in New York, a few days ago, I found him trying it. The cloth he used was light table linen. At that time he had just commenced its use, and I am unable to say now whether he finds it efficacious or not, but I am told he does.

Photography as an Aid to Geology.—Photography is gradually intruding its services among the dignitaries of science, and is now generally acknowledged to be a great helper in almost every branch of science. Nearly all scientific expeditions (except eclipse expeditions from England) now take a photographer along as regularly as they do their rations.

Prof. S. F. Hayden, our Government geologist, is just returning from an expedition to the far West after an absence of nearly three months. He was accompanied by Milburn H. Jackson, of Omaha, Nebeoska, one of our smart young landscape photographers, whom Prof. Hayden first provided with an excellent assortment of Ross lenses, boxes, and so on, best suited for geological photography. Hundreds of valuable negatives have been secured, and are to be printed by the Woodbury process for illustrations in Prof. Hayden's report. Thus photography is made to save much writing, and drawing, and lithographing, and to render to all the geologists of the world a true record of what actually exists in the mysteries of our western wildernesses.

To show you what photography can do in this direction, I enclose you three prints from negatives recently made by J. C. Browne, Esq., president of our Photographic Society of Philadelphia, of a very curious geological mystery near this city, which is now attracting a great deal of attention among geologists. As you will see by the photograph, there is a ridge of rock, which has been considerably worked as a quarry. In some portions of this ridge the upper part of the rock appears to have been subjected to enormous pressure, either from above or laterally, breaking it into comparatively small pieces, and forcing these from their original vertical position to positions at all angles, while the layers retain their relative location. The photograph shows a section at this quarry. The sandstone is highly quartzose, but contains much mica, and is somewhat flexible. It splits very readily in a vertical direction, but breaks irregularly in any other, except where divided by joints, which are numerous. The quarry was opened on the side of a gently sloping hill, and has been extended in the direction of the crest of the hill, nearly north-east. The north-west side of the quarry (to the left of the photograph) is some forty feet in height from the bottom of the quarry, the opposite about twenty. The bottom of the quarry is concealed by the quarried stone and earth seen in the middle of the picture. As will be seen by a close inspection, especially if magnified, the layers are not bent or twisted as usual in upheavals and synclinal and anticlinal axes, but are broken into fragments of greater or less size, with open and empty spaces between them. Some of these spaces were two or three inches in width, and of unknown depth.

The whole appearance of these remarkable rocks seems to indicate that the force which acted upon them was not from below, or a purely lateral pressure due to an intrusion of eruptive rock, but rather that it has been a surface action—as, perhaps, of some vast mass of ice moving slowly from the north-west. Whatever the force, it must have been enormous, yet very limited in its action, for while it is difficult to conceive of a force sufficient to break down a mass of solid rock, as this has been broken down, yet a few feet from the surface the effect disappears entirely, the layers remaining in their original vertical position. The line at which the original direction is unchanged is nearly straight, and is at an angle of about 24° with the horizon, while the slope of the hill itself is about 14°.

The discovery of this curious geological mystery was made by Theo. D. Rand, Esq., an amateur geologist of this city. The photograph will show you the elevation of the hill or ridge, and also a near and distant view of the rock-formations themselves. Experienced geologists, who have travelled nearly the world over, state that this is the only instance of the kind known to them, so in comes modest, indispensable photography to help show to the world more plainly this wonderful curiosity than all the drawings and descriptions of the hand of man could do. When will it be appreciated by the dear public fully, and patronized, and paid as it should be?—Truly yours,

Edward L. Wilson.

Philadelphia, November 15th, 1870.

PHOTOGRAPHY IN GERMANY.

BY DR. VOGEL.

Enclosed I send you some prints from Obernetter, made after a process which is not known, but which is probably similar to the Lichtdruck or Albert-type. Known or not, it is certain, I think, that it is the best I have ever seen in this manner. I have sent the negatives (from our Grasshoff) to Mr. Obernetter, and, knowing the silver prints from it, I can judge fairly. Indeed, the Obernetter print is sharper and deeper than the silver print from the same plate; and what is now surprising is the price. Obernetter delivers 1,000 cabinet pictures (unmounted), on varnished paper, for 46 thalers (7 livres st.); on plain paper for 5 livres; and he can print daily 500 specimens from one plate.

The business—before injured much by the war, and limited in the reproduction of photographs of killed soldiers—is much better now than it was some months ago. Our manufacture in chemicals, cardboard, stereos, and other photographic articles is even greater, perhaps, than before the war. A great many articles, sold before only in Paris, are, since the siege of the latter city, ordered in Berlin, and are made here as good as there by the aid of numerous friends—German emigrants driven away from Paris. In this manner, though we suffer very much from the war, our industry will have much profit, and this will be very important for the future. But let us hope that this dreadful war may be soon over, for what is all material advantage against the loss of life? The lives of our soldiers are the most precious, as they are not ordinary warriors, but intelligent citizens, and very often husbands and fathers. Our celebrated photographer Petsch, who was before Metz during the siege as corporal, has now returned safe as guide of some thousand prisoners he escorted to Danzig.

The photo-crayons you kindly gave in London I have shown to the Society for the Advancement of Photography, and they very much admired them. They were the first pictures of this kind shown in Berlin. The new style of card (the Victoria card), being between cabinet and carte size, has been some weeks introduced here, and I believe it will have success.

The German scientific expedition sent to the Arctic regions fifteen months ago has returned now, and has brought back, as a very interesting result, some eighty dry plates exposed in the northern countries, and developed here a fortnight ago by Mr. Harnecker, the maker of the plates. The plates were prepared with Harnecker's own process (resin process), and delivered to one of the astronomers, Mr. Copeland. This gentleman is not a photographer at all; he could only focus and expose, but without any experience as to the necessary exposure. Nothwithstanding, the result was very satisfactory, and Mr. Harnecker has brought out, by development, pictures good enough for making drawings from. Some of the plates were exposed about one year before the development, and the latent image kept well the whole time, a fact of theoretical and practical interest.

I read in your paper that the intended English eclipse expedition will not start,* because the Government had no money for it. This is to be regretted. America sends two expeditions; Austria also two. France and Germany cannot send one; but it is necessary to have as many observation points as possible, and therefore the trouble as to the English expedition will be a loss for science. I hope that your Government will change its first intention.

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* This, as our readers know, has been changed, and England will take its legitimate share in the observations.—Ed.

PHOTOGRAPHY AND THE PIGEON POST.

Our readers are aware that microscopic photography has been made available by the Parisians as an aid to communication with the world outside the investing armies. The special correspondent of the *Daily News* gives some interesting details of the operations of M. Dagron, whose connection with microscopic photography in the production of pretty little toys like miniature opera glasses is well-known. We condense some portions of the letter in question.

It is rather interesting to see the balloons go off, and I had the pleasure of seeing two launched this morning—the Niepce and the Daguerre—from the station of the Orleans Railway. It required, however, a good deal of faith to keep up one's interest in the special mission of these balloons, which is indicated in the names of photographic celebrities given to them. Their mission is to arrange for the return of answers to the letters which are dispatched from Paris. We have now been eight weeks beleaguered, and though the seige has brought privation and misery to many, I believe the misery of silence and ignorance is to be ranked above all the other disquietudes of these eight weeks. The cry of distress from myriads in Paris, who crave to have but one word—a yes or a no—from their families, is so urgent that at last the manager of the Post-office has organized a system by which he hopes to bring us news of our friends. Any one in Paris can write at length to friends outside, and may reduce the information he wants to a minimum by asking four questions, to each of which the answer will be "Yes" or "No." The correspondent will fill up a paper which will be forwarded to him, giving his monosyllabic answers properly numbered. He will then address the paper to the director of the post-office at Clermont-Ferrand, in the Department of Puy-de-Dome, where all the answers will be collected together, and, with the names of the persons for whom they are intended, transferred to a large sheet. The sheet, again, will be photographed microscopically. Three or four sheets the size of the *Daily News* can be reduced in this way to a space no bigger than a finger nail; and when the image thus diminished is transferred on a film of collodion to some safe tissue, it may be entrusted to a pigeon for transport to Paris, where it will be once more enlarged, and where the answers will be distributed. By a similar process it is also proposed to send messages not exceeding forty words into Paris at the charge of half a franc for every word.

A goodly number of people assembled by invitation at the Orleans station to see M. Dagron, the photographer, with his assistants and his instruments, start for Clermont-Ferrand. If any one in England can pluck up heart to send a despatch to any one in Paris, let him send either to the director of the post-office, or to the distinguished photographer, M. Dagron, at Clermont-Ferrand.

Two balloons were thus prepared to-day, and the Messrs. Godard invited about a couple of hundred of their friends to see them start. First of all a pilot balloon was sent up to see which way the wind blew. This is a paper balloon, about eight feet in diameter. The day was magnificent, after a long term of villainous weather, not a cloud in the clear, cold sky of this bright November morning. The pilot balloon bounded up with amazing velocity. When it attained a great height it found a current of wind that blew it eastward—perhaps a point or two to the north of east. I at once came to the conclusion "They will never start a balloon to fly in such a direction as that, right on to the provinces which are in the hands of the Prussians." But I was mistaken. The brothers Godard prepared to fly their balloons all the same, and with the full approval of the director of the post-office, M. Rampont, who was present. I said to one of the Messrs. Godard, "How can you propose to fly your balloons due eastward? Surely it is certain destruction." "It is not a good direction," he replied, "but the Prussians are not everywhere—who knows?" He proceeded to load the balloons. The first, the Daguerre, carried half-a-dozen great sacks of letters, a passenger despatched by the Government on a special mission, supposed to concern the revictualling of Paris, and four baskets of pigeons. It shot into the air at half past nine, and drove right eastward. In two or three minutes more the other balloon, the Niepce, containing the photographers with their instruments, were launched, and took the same unhappy direction. We watched the balloons till they were out of sight, and if I felt very uncertain before as to the success of M. Dagron's photographic scheme through default of the pigeons, it was impossible not to feel still more uncertain of it, as it is very probable that he and his assistants and his instruments will fall prisoners into the hands of the Prussians. As if to confirm these evil forebodings, the only pigeon we have had for fifteen days has come back to inform us, among other things, that the balloon, the Galilee, which left here on November 4th, has been captured by the Prussians.

But, for reasons over and above those I have already indicated, I have no faith in the result. Suppose that M. Dagron and his instruments should not fall into the hands of the Prussians; suppose that a pigeon should actually come to us once in fifteen days; and suppose that really I receive one fine morning a despatch-answer containing a "yes" or a "no" to four different questions—still, if the "yes" or the "no" were contrary to my wishes, I should not be able to put faith in it. See what happens. A pigeon will carry at the very least 10,000 of the letter despatches—it may be 20,000—that is, from 40,000 to 80,000 "ayes" and "noes." Indeed, as the pigeons at this time of the year are not to be trusted (that which arrived to-day took six days to travel from Vendome), it is probable that, to make assurance doubly sure, each one will carry not only its own myriads of despatches, but copies of two or three preceding myriads entrusted to other carriers. Is it to be supposed that 50,000 "ayes" and "noes" can be transcribed twice over in endless permutations without many mistakes? First of all, at Clermont-Ferrand all the despatches have, before being photographed, to be set up in so many hundred pages of type. It is difficult to escape error in ordinary printing, where the compositor can check himself by the sense of the passage he has to set up. What accuracy are we to expect when his work is confined to the arbitrary and confused arrangement of "aye" and "no" in an everlasting series? Then, when the despatches arrive in Paris, they have to be transcribed again; and again we may expect confusion of mind in clerks who have to copy out 50,000 "ayes" and "noes" in glorious disorder. For these reasons it is difficult to have any faith in the elaborate "aye" and "no" scheme patronized by the French Post-office.

While this letter is still on my hands, waiting for a balloon to carry it off, five pigeons have arrived, bearers of the dolorous news that the Daguerre, one of the balloons mentioned in my letter, has fallen into the hands of the enemy at Ferrieres. The dismal forebodings suggested by the unhappy direction of the wind have so far come true. What has happened to the Niepce, the balloon which contained the photographers and their apparatus, we do not yet know.

Let me here also state, as it relates to the subject of the present letter, that there is another means of communication with Paris besides that which the Post-office has established, or, I should rather say, has proposed to establish, at Clermont-Ferrand. There have just come into Paris, through the telegraph, 226 private despatches. The service is organized at Tours under the direction of M. Steenackers. Messages forwarded to him by telegraph are put into type, in order to reduce them to a small compass. Photography makes a still further reduction of the printed page, which, when it reaches Paris on the wings of a pigeon, can be read through a powerful magnifying glass. I do not tell you this as news, since, probably, you have already heard of it from Tours. It is important, however, to let you know that the telegraphic service organized at Tours has been so far successful

THE ETHICS OF POPULAR EXHIBITIONS.

BY W. T. BOVEY.

The relationship which exists between popular exhibitions and ethical philosophy is so broadly marked that it needs but little mental effort to detect the link which connects the one with the other, as we have only to regard an exhibition in the light of an appeal to the sympathies of men to draw the subject within the circle that encompasses the science of morals, because an appeal to the sympathies of humanity constitutes a test that probes to the bottom public feeling, and sounds the depths of an existing state of intelligence and morality. Or, to put the matter more plainly, exhibitions practically represent, wholly or in part, prevailing tastes and public morals; and might, therefore, be regarded as combinations designed to chord harmoniously with the thoughts and habits of some portion, or of the whole mass, that constitutes society. Hence it is that in all ages of the world's history peoples have inaugurated, and have gleaned gratification from, exhibitions which, in the natural order of events, have kept shoulder to shoulder with civilization; and now, having left barbarism far behind, they have become practical illustrators of trained industry and æsthetic refinement. There are, certainly, even in these days, exhibitions which pander to the grosser passions and tastes; but expositions of this class are so few and far between that their comparatively rare recurrence afford proof conclusive that disciplined tastes maintain their legitimate place in the disposition of intelligence.

Turning from exhibitions of general character to those which are immediately connected with industrial pursuits, we have to remark that, as now conducted, these are of two magnitudes. First, the branches which are expositions of local industries and restrictive interests. These might be regarded as tributary streams which, when united, form an exhibition of the greater magnitude, whose humanizing mission it is to show what civilization has accomplished in leveloping those arts which add to the comforts and well-being of the human family.

In considering the nature of the assistance rendered to he cause of progress by industrial and art exhibitions, the means by which such aid is afforded will be found worthy of notice. A desire to excel is a power whose influence is elt by every human being, if endowed with a healthily attuned mind. An opportunity of competing is a spur applied to ambition, and each competitive worker is thus stimulated to seek to gain for himself a crowning mark of approval. The end aimed at by an exhibition of an industrial kind is, however, *not* merely to show what *has* been done; its chief object is to develop latent ideas by an application of the all-moving force of comparison. A hasty glance at the matter would lead to a conclusion that an exhibitor who had already done his best could hope to do no better. At once, arguments incontrovertible offer to prove the fallacy of such a supposition. Men by nature are imitative beings. Each mind is but an atom in the world of intellect; and although ideas are cumulative, yet there is an inertness which must be overcome ere the mind's latent powers can be developed into activity. Isolation contracts thought and cripples genius; but an intermingling of thought with thought—a comparison of ideas with ideas—these are the powers which set the mind free, and develop an elasticity of mental power which at once opens up a new world of intelligence, and new fields for the enterprise of invention and design. The spell wrought by isolation once broken, directly eyes become opened to improvement which before remained invisible and unsuspected. Witness, as examples, the photographic exhibitions!

The first exposition of the kind was held some years ago in a room situate at Pall Mall, London; the last is now on view at No. 9, Conduit Street. Mark the contrast! The first might be likened to a puny, deformed infant. We did our best to believe it beautiful, but 'twas the exercise of such a fancy as a fond mother feels towards a sickly, ill-formed offspring.

The last is *not* perfection. 'Tis a giant, notwithstanding. Whence the power that wrought the marvellous change? We reply, comparison, and the force of good examples. In every department of industrial life there will always be found exceptional superiority—men possessing ideas somewhat in advance of those held by their fellows. These are the pioneers of progress—the modellers for their less gifted brethren. Take as examples the names of Rejlander, Robinson, Salomon, Williams, Hubbard, and many others. Shall we dare say that the superiority of the present exhibition is not immediately due to the teachings afforded by the works of these great pioneers of photographic art? Mark the influence of Salomon, as realized in those beautiful productions of Blanchard! Notice particularly the grand development of Mr. Robinson's teachings in the exquisite landscape of Mr. Earl! Their art feeling and poetic fervour are realized, which have been set free by the inspiration of example. In short, we might cite instances *ad infinitum*, but time and space forbid. The subject must *not*, however, be dismissed without reference to that future which, if analogy is a reliable guide, will be one of continued progress. Men will continue pushing forward to the front; others will learn, strive, and succeed in occupying the prominent places; and so will roll on the ball of progress, even unto the end.

But how fares it with patient, plodding mediocrity? Can one who has nearly reached the length of his appreciative powers find help in exhibitions? Assuredly he can. There are few so slenderly gifted as to be altogether void of those feelings which find gratification in a contemplation of things beautiful. Nor are there many whose instincts are unable to discriminate between the good and bad of art products. The generality of men possess these powers, and use them by intuition. Examples: A man need be no poet to detect a fault in rythme measures; he requires no knowledge of music to have his ear offended by "discords." Music is but the poetry of sounds; rythme the harmonizing of words. And what are pictorial productions but the poetry of form? And a perfectly composed picture will as readily assert its merits to the eyes of an uninitiated beholder as a well-balanced line of poetry conveys gratification to the ears of an ordinary reader. In proof of this it must have been noticed that the best pictures now exhibiting at Conduit Street are the chief points of attraction to general visitors. The reasons for this preference can be explained readily, but such explanation cannot find a place here, being more fitting an embodiment with an essay that treats on the origin of art and art feeling, subjects which will receive consideration hereafter.

In conclusion, the object of this brief essay is an endeavour to prove the important relationship of exhibitions with progression. It remains to be added, that expositions exercising, as they unquestionably do, a vast amount of influence on the minds of visitors, they should be so conducted as to be rendered equal to the duties they have to execute. And, to effect this, it is necessary that the machinery should be so arranged as to afford every facility to learners who seek instruction. The photographic exhibitions have hitherto been most deficient in this respect, as, for want of a harmonious and judicious classification, the effects of the extensive pictorial display are most bewildering. Large and small pictures; landscapes and portraits; light subjects and dark ones, are intermixed, like an ill-assorted patchwork. If improvement is to be derived from comparison, the pictures should be hung and classified in such a manner that attempts at comparison may be made without the necessity of moving from point to point that lie too far apart for ready observation. It is to be desired that an improvement in this respect will, in future, become a matter of consideration. Yet one more remark, and our present work is done.

An exhibition should be regarded as holding moral obligations, and care should be observed that nothing offensive find an authorized place within its boundaries. Many of the visitors on the opening night of the photographic exhibition were offended at a silly attempt of wit, a malicious whim, a lack of good taste, or an utter want of common sense, which an exhibitor aimed at two gentlemen whose good services to photography render deserving of a more worthy recompense. The quick removal of the disgraceful display proves its presence to have been due to an oversight on the part of the hanging committee. It is to be hoped that the transgressor has moral sense sufficient to understand that exhibitions are mediums whereby a friendly rivalry may stimulate each exhibitor to aim high after perfection; but when, under such circumstances, success is the object aimed at by malice, such holder of malice can only be classed among fools. Who among the visitors at the photographic conversazione was most prompt in according praise? Why, Adam-Salomon, at once a master and a pupil, thus exhibiting the greatness of his mind, thus illustrating a precept which ends this chapter, "Teach all you can, learn what you can." Thus teaching and learning, progress will continue until the end of time.

SOME HINTS ON CLEANING PLATES.

A Conversation.

BY VULPES.

Frank. Seasonable weather this; is'nt it, George? Dull November, indeed. Our ancesters made no mistake in christening this month dull. Dull it is for most folk, but dullest of all for you photographers, I should think.

George. My friend, that's just as we take it. Suppose all our months were June, and our studios continually crowded, would not the life of a photographer become intolerably monotonous? To my mind, the ebbs and flows of business are as necessary as the variations of the seasons.

F. Very fine and philosophical, George. I perceive the weather has made you thoughtful; perhaps in proportion as it lessens your receipts.

G. Pungent, as usual; well, I'll take your remarks as I take the weather, and make the best of them. When one is thoughtful, as you say, a word is frequently a suggestion. Now, tell me which is the greater evil, an empty purse or an empty head?

F. There, now you want to moralize. I know all about "Jaques and the wounded stag." Have you nothing new in photography—no new process—no modifications of old ones—no hints even for better work with more certainty?

G. Yes. Here are several recent numbers of the Photographic News. I'm sure you will find something to instruct or interest you. What do you think of the letter from "W. W." about tunicare? [Reads.]

F. Ah! I see he is like and unlike Gulliver; both have failures with it, but in different ways; and yet others succeed admirably with it. How do you account for such contradictions?

G. I do not attempt to account for them; I know that operators will always have different modes of working, and, consequently, uniform results are not to be expected.

F. You mentioned some time ago a method of cleaning plates you had devised, which you expected would prove very satisfactory. Have your expectations been realized?

G. They have.

F. Then you consider your method an improvement on those already in vogue.

G. Certainly, else I should not continue its use.

F. What special advantages do you find?

G. Perfect exemption from the failures "W. W." and others complain of. When first I used a preliminary coating on the plate I had vexatious failures, and was on the point of discontinuing it; but, finding some great advantages, I was loth to abandon it, and on watching narrowly the operations of preparing and applying the solution, also the method of drying the plate, I found out the causes of failure. I had carefully rinsed the plates with clean water, poured the solution from a clean glass measure, while holding the plate by one corner, and then reared on blotting-paper to drain.

F. Wouldn't that do?

G. Sometimes, not always. I wanted certainty.

F. I hope you got it.

G. Well, I arrived nearer to it.

F. What were the causes of failure?

G. Dust, capillary attraction, and unequal drying. I found that, however clean the hands might be, it was not a good way to hold the plate between thumb and fingers; that pouring from a glass measure was objectionable; and that resting the dripping plate on blotting-paper was a mistake.

F. How did you overcome the difficulties?

G. In the simplest manner possible. A batch is now ready for cleaning, and, if you like, you shall assist.

F. With all my heart.

G. Come along, then, into my laboratory.

F. "What do mine eyes behold?" Why, George, I always thought you did not smoke. Has Professor Huxley converted or perverted you? What's the meaning of all these long tobacco pipes. You have a whiff here privately, I suppose.

G. You shall see presently what use I make of those pipes. Look here, on the old varnished plates, which have been in a hot solution of common soda, and then transferred to dilute (very dilute) hydrochloric acid. See how the films slip off. Take this and rinse well under the tap; there, that will do. Now attach the pneumatic holder. Another rinse. All right; not a particle of dust or dirt on it. Now place your forefinger on the top of the tube you see in the bottle. Lift it out carefully. Put the lower end on the plate. Now let in the air at the top of tube by slightly raising the finger, and allow the solution to flow all over one side of the plate. Run the surplus into that wide-mouthed bottle. Put your tube back again to refill for the next. Now place the plate on those two parallel pipes, under which there are several folds of blotting-paper, detach the holder, and place another pipe against back of plate. Repeat the operation with another plate again and again, always putting a pipe between.

F. Ah! now I see all. Your glass tube is not allowed to reach the bottom of bottle, so it never disturbs any sediment. The end, when placed on the plate, effectually prevents air-bubbles, and the parallel pipes on which the plate rests stop capillary attraction, while the third pipe between touches only one point at the upper end, and secures a free current of air over the whole surface.

ON THE IODIDE OF SILVER.

BY DR. J. SCHNAUSS.*

There is scarcely any more interesting theme in photographic chemistry than the development of the—at first invisible, but nevertheless existing, and therefore latent—picture in a film of iodide of silver. And one is, in truth, not asserting too much by stating that this chemical process is the corner stone upon which all photographic skill is based. For the wonderful Lichtdruck method, as also the many similar means of multiplying and vulgarizing photographs, founded upon the employment of an organo-bichromate mixture—as the carbon and pigment printing processes, and others—all require, in the first instance, the production of a photographic image, whose existence is due to chemical development. For this reason, I shall, I am sure, be excused if I pursue the subject more closely, especially as scientific chemists are, now-a-days, inclined to treat photography in pretty well the same way as a neglected step-child. Let anyone examine the chemical handbooks recently published, and they will find the same almost entirely ignorant on the question of iodide of silver, all information regarding this interesting compound being recorded only in the photographic journals.

Whenever iodide of silver is produced, it should be accurately determined whether, at its precipitation from nitrate of silver solution by means of an iodine alkaline metal, there was an excess of the former or the latter, for hereby are modified not only the actinic, but also the purely physical, qualities of the product. By actinism, by the way, is now understood the behaviour of chemical bodies in the presence of sunlight. If the iodide of potassium has been in excess, the iodide of silver produced is totally non-actinic, almost white in colour, very voluminous, swelling to nearly double its size during the washing operations, and precipitating but slowly. If, on the other hand, the nitrate of silver has been in excess, the product is of a beautiful yellow colour, easily precipitated, and rendered brown by the action of the solar rays. Both of these compounds may be washed and collected by means of distilled water, without their qualities being in any way changed or impaired.

The results are the same when the precipitation of the iodide is brought about by means of a metallic iodide like that of cadmium, instead of an alkaline metallic iodide.

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* *Photographisches Archiv.*

There exist, therefore, obviously, two descriptions or modifications of iodide of silver, of which one is non-actinic, and may be called $\mathrm{Ag\,I}$; and the other actinic, or $+\ \mathrm{Ag\,I}$. Both of them are deserving ot careful quantitative analysis to determine their different atomic weights. Acted upon by a reducing agent—or, in other words, by a photographic developer (as, for instance, pyrogallic acid or iron solution)—neither of the modified compounds suffer any change; but as soon as a drop of silver solution is added to either of the above, a blackening of the precipitates is perceivable. From this, it would seem immaterial whether for the sensitive film the +, or — $\mathrm{Ag\,I}$. is employed, if, after exposure to light, a little silver solution is added to the developer; or if the photographic film is, after exposure, and before development, dipped into a dilute bath of nitrate of silver.

Such is, however, by no means the case, as it is only the $+\ \mathrm{Ag\,I}$ that is really capable of receiving the latent image. For if an experiment is made with an ordinary iodized collodion plate sensitized in a silver bath (in the dark, of course), to impregnate it with iodide of silver, and half of the film is poured over with an aqueous solution of iodide of potassium, in such a manner that the other half is not acted upon thereby, and the superfluous iodide of potassium is subsequently washed off, and the plate then exposed in the camera, it will be found that after re-dipping for a few instants in the silver bath, and applying the developer, an image is impressed only on that portion of the plate covered with $+\ \mathrm{Ag\,I}$ (that portion, viz., not treated with the iodide of potassium solution), the other part of the glass coated with $-\ \mathrm{Ag\,I}$ showing but the very slightest trace of any action of light upon it. Properly speaking, there should be no visible impression whatever on the latter portion of the plate; but the same is properly to be explained in the same way as that observable on a film of uniodized collodion dipped into a silver bath, and exposed and developed, and which is due, no doubt, to the presence of an organic sensitive silver compound contained in the pyroxyline—similar to silver albuminate.

If a plate coated with iodized collodion, and sensitized, is exposed in the camera, then treated with iodide of potassium solution and well washed, redipped in the sensitizing bath and developed, a perfect and vigorous image may be obtained.

My experiments in this direction have, therefore, moreover, yielded the remarkable result that the iodide of potassium solution does not destroy the image impressed upon an exposed plate, but, indeed, actually preserves it from further solar action. For if a sensitive collodion plate of the ordinary kind, exposed in the camera, and thus impressed with a latent image, is afterwards treated with a solution of iodide of potassium, and then washed, it may be freely set out to the full action of sunlight without undergoing further change. The iodide of potassium has, however, no apparent action upon the film, for a plate thus treated, if dipped again into the silver bath (in the dark room), and then developed, yields a clearly defined image, such as was projected upon the sensitive plate whilst in the camera.

It has occurred to me that many able photographic chemists, in recording the results of experiments instituted with iodide of silver, have drawn conclusions quite opposed to one another, such as Dr. Vogel of Berlin, Dr. Reissig, and M. Carey Lea. It is not my desire here to discuss the theories laid down by these gentlemen, as they are all somewhat at a loss to account for the actual cause of the attraction which the iodide of silver exerts upon the minute silver particles reduced from the nitrate solution by the developer, and which go to form the visible image. Particularly remarkable is it that this quality remains unimpaired, in the several dry plate processes, for months after the light has acted upon the film. Dry plates do not, however, exceed in sensitiveness those of wet collodion, as the latter during exposure are always covered with a coating of aqueous silver solution, a fact confirmatory of the correctness of my previous statements, if these are rightly understood and appreciated.

Iodide of silver is dissolved in large quantities, to equal equivalents, in nitrate of silver solution; if the latter is of a neutral character and contains no excess of nitric acid, the haloid double salt ($\mathrm{AgO,\ NO^5+AgI}$) recovered is very sensitive, blackening in the daylight much more quickly than iodide of silver, or nitrate of silver, alone. On the other hand, if the solution is of an acid nature, the result is different, for the free nitric acid redissolves any silver particles reduced by the action of light. From these facts spring the different views taken of the sensitiveness of this interesting double salt. The English chemist and photographer Sutton, in his Dictionary of Photography, says that "this double salt is also formed when a sensitized collodion plate is allowed to dry spontaneously, without the nitrate of silver from the bath being previously washed off. Free $\mathrm{AgO,\ NO^5}$ is then concentrated on evaporation of the moisture upon the dry film, the iodide of silver separating and forming crystals of the double salt. In this case the same is not decomposed by water, and no iodide of silver is precipitated; neither is it blackened by daylight, but remains, on the contrary, apparently unchanged by solar action. Nevertheless, it has been affirmed by Dr. Schnauss that the opposite results are obtained." To these remarks I would reply, that anyone who repeats this single experiment cannot for a moment understand how this otherwise eminent English experimenter could have been thus mistaken. If a sensitized plate is allowed to dry in the dark, its surface will show the beautiful starlike formation of the crystals of the double salts, and the addition of a drop of water causes at once the yellow iodide to dissolve out; moreover, if exposed to light the plate soon becomes browned, especially if in a wet state, although the darkening can only be seen when the light strikes the film in a certain direction.

How very difficult iodide of silver is to separate from the nitrate solution may be gathered from the following example. In the so-called negative bath into which the iodized collodion plates are dipped to render them sensitive there becomes dissolved, according to its concentrated nature, a certain quantity of iodide of silver. The first collodion plate dipped into a new bath is often injured by reason of the iodide stored up in the film being dissolved out by the action of the solution, and on this account photographers generally saturate a new bath in the first instance with iodide of silver. When, in course of time, a bath of this kind becomes unserviceable, and it is desired to recover the silver therein contained, the latter is either thrown out in the form of chloride of silver, or metallic silver, the iodide being in both cases precipitated with them. If the silver has been precipitated in the form of a metal, which, after washing, is dissolved again in nitric acid, the iodine contained is likewise redissolved, and, on evaporation, the result is crystallized nitrate very rich in iodide of silver. The same occurs when the old bath is precipitated in the form of chloride; with this latter the iodide likewise falls to the bottom (being, indeed, but imperfectly decomposed on the actual fusion of the metal), and becomes mixed with the reduced silver, and dissolved again with this when the mass is treated with nitric acid. It is only, in fact, by having recourse to the somewhat tedious operation of precipitating out the iodide by copious dilution with water that the compound in question can be to any extent separated from a nitrate of silver solution.

Correspondence.

COPYRIGHT PIRACIES.

Sir,—Mr. Cunnington really shows that his talents might be better employed than in advocating the cause of copyists. His challenge of submitting the four convicted copies to any important witness I would gladly accept, but, somehow, the person who had charge of the parcel containing these copies, when at Worship Street, lost it, and other important documents.

The magistrate fitted them all himself, and remarked to me that there was a slight difference in size. And it was partly on this, together with several other corroborations, that Knight was convicted.

Knight's letter is one mass of mis-statements. I never asked him £20; the expenses were £6 7s., which was paid, although I never received it, but appropriated it to a good cause, which, no doubt, would be appreciated.

As to the "Charming Incident" not being my copyright, but the property of a New York man, I deny it. The copyright is still mine, although the steel plate was sold to a Yankee; but a steel plate is one thing, a copyright another.

The letters my man wrote from Oxford to purchase more were sent *after* the purchase of the convicted copies, and after the observation made by Knight to my manager, that there was no copyright, &c. I consider I was perfectly justified in making him feel through his breeches pocket, a fact generally remembered above anything. No honest trader would fear a trap. Even if laid, when a man knows an action to be dishonest, he should not be tempted.

Mr. Knight says I get my photographs for 1¼d and sell them for 8d., and that I get more profit than he does. And so I ought, as he has no outlay beyond his 2½d. If a subject cost me, engraving and copyright, £1,000, every 8d. copy I sell has cost me £1,000 less the 8d., until the outlay has repaid itself. That is the only business way to look at it; and if he add the interest of the outlay he will find my profits to be only a lean trade. Mr. Spencer prints my scraps, and not a German; and I pay 100 per cent. more than Mr. Knight quoted.

I must now decline any further correspondence on this subject, of which your readers must be quite tired, as well as myself.—I am, sir, your obedient servant, B. Brooks.

17, *Great Portland Street.*

PIRACY AND COPYRIGHT.

Sir,—In my letter of the 8th instant there are two statements which I wish to correct. In writing of "The Stag at Bay," I assumed that in the case referred to the defendant had copied the engraving first published. At the time I was writing I had for the moment forgotten the engraving published by Mr. Graves. Upon the engraving first published his name would not appear, as it was published by Mr. McLean. The circumstance is immaterial, and in no way affects my argument. No engraving of "The Stag at Bay" can be copyright under the Artistic Copyright Act. The passage, "impressions which, in the present day, are worth not so many shillings," should read, "impressions, the like of which, in the present day," &c., &c. I alluded to the annoyance caused to subscribers for expensive engravings by the practice of publishers, when an engraving gets stale, selling the plate to an inferior dealer, who disposes of impressions at so cheap a rate that they are carried about from door to door by street hawkers.

With reference to your note at foot of page 562, had it so happened that in the case to which it alludes there was copyright under this Act in the engravings, my argument would not have been affected thereby. The summonses were issued for an offence under the second clause of section 7; and if, upon the hearing, a conviction was made for an offence against section 4, it would be bad in point of form. The defendant could only be convicted for the offence for which he was summoned.

Your correspondent "Bookworm's" letter is short, and I will notice that next. I have never said that artists' proofs were of no value. I am aware that artists' proofs, so-called, bear the stamp of the Printsellers' Association, and I am also aware of the reasons which induced Dominic Colnaghi to promote the establishment of the Association. In former days the impressions taken from a plate by the engraver during the process of engraving, for the purpose of testing his work, were by connoisseurs much valued on account of their rarity and excellence. This led to the practice among publishers of printing off a number of impressions before the lettering was incised upon the plate. These impressions were sold as veritable artist's proofs. To such an extent was this practice carried, that it became necessary to check it. The Association was formed for that purpose, and the members of it agreed that a certain number only of early impressions should be issued as proofs, and they, and no others, were to be stamped with the mark of the Association. I cannot say that I have the same confidence in the mark of the Association as I have in the stamp of the Goldsmiths' Company. When impressions from a plate are stamped as proofs to the number of many hundreds—I think I may venture to say thousands—I feel sceptical as to their value. I do not know what "Bookworm" means by "original proofs," nor when impressions become or cease to be original. An original edition of a book I take to be the first edition, and, *cæteris paribus*, all copies of that edition are of similar value. It may be, and frequently is, that copies of a second edition are of greater value than copies of the first edition. The value of proofs depends principally upon two conditions: their technical excellence, and their rarity. I will not dispute that eighty guineas may have been paid for a proof of "Bolton Abbey," but my experience does not extend beyond forty-eight guineas for that subject. Very high prices are frequently paid for proofs; the highest that has come within my knowledge is 1,180 guineas. Should "Bookworm" at any time desire to invest in engravings, let me advise him not to place too much confidence in the stamp of the Association. Should he meet with a proof bearing the cabalistic letters X. Y. Z., he may, with a little patience, calculate how far removed it is from the first impression. Let him see that the stamp is placed at the left hand corner of the print, and that the print has not been manipulated in the York Road, Lambeth, West End dealers, like their brethren in the East, being equally capable of palming off spurious proofs upon unwary customers. I must challenge "Bookworm's" statement that "proofs always keep up their value;" such is only exceptionally the case. I could, if time and space permitted, state the prices which have been realized for the majority of proofs. "Bookworm" concludes his letter thus: 'As copyrights expire they become public property, and are re-engraved in all shapes and sizes; yet the original edition keeps its value." I am afraid the books which, during his vermicular existence, he has devoured, have proved rather indigestible, judging from the ambiguity of his expressions. When copyrights expire they do not become public property; they simply cease to exist, and can belong to no one. Neither are they engraved or re-engraved in all shapes and sizes. By "original edition" I suppose he means the impressions taken from the first engraved plate of the subject: if so, his proposition is unsound; it frequently happens that impressions taken from a certain plate are of much greater value than impressions taken from the earliest plate of the same subject.

I will now touch upon some of the statements contained in Mr. Brooks's letters. He asserts that I have spoken unkindly of him. Allow me to assure him that I have not done so. Towards Mr. Brooks and his brother publishers I have not the slightest animosity. Judging from his letters, I think he must be a little addicted, as Artemus Ward would say, to writing "mettyforickally," and also a little oblivious as to certain facts. In a letter written by him February 10th, 1870, a copy of which is before me, he says: "During the last two years I have taken 163 cases into court, and not on a single case have I lost the day." I think there must be a little exaggeration in this statement. If it be true, it shows that he possesses great perseverance and industry, as we have his word for it that he does not employ any informers. The majority of the cases were, I presume, heard in the country, as I have no recollection of any having been heard in London during the two years. I should like to know whether the "common practice" of cutting off the stamp came to light in either of the 163 cases.

Mr. Brooks says that my trade is gone unless I can shake the validity of a copyright. In answer to this, I must distinctly assert that I am no more addicted to piracy than I am to giving false evidence, and that my trade is quite independent of any question of copyright. As regards the "convictions of judges, juries, and magistrates," I may remark that no action for infringement of the Artistic Copyright Act has yet been tried before a judge and jury. All convictions have up to the present time been made by magistrates, who are not always *learned* men. One case has been tried before the judge of the City Court, and that resulted in a verdict for the defendant. There have been no appeals, properly so called. Two applications have been made to the Queen's Bench for rules calling upon Sir R. Cardon to show cause why a mandamus should not issue requiring him to state a case. One application was refused because the Court considered the grounds of it insufficient; the other application was granted, the rule was issued, argued, and made absolute; it is still pending.

Mr. Brooks states that he gave £1,100 for Millais' celebrated subject (steel-plate copyright) "The Huguenot. For what, and to whom, did he pay the money? Was it for the copyright, or for the plate and stock? The "wrinkles" in copyrights are caused by the deliberate and sometimes fraudulent acts of the publishers themselves, and they have no right to complain when others take advantage of them.

In his second letter Mr. Brooks says that my letter is so full of mis-statements that he must reply to set me right. I am much obliged to him, and will endeavour to reciprocate his kindness. With reference to "The Black Brunswicker" he says I am in a fog. Perhaps he is in a similar position. How does he know that the copyright was assigned by the author? Has he seen the agreement of February 7th, 1863? Has he seen the deed duly stamped and signed by the four liquidators? Are there four liquidators? I am under the impression that there is but one. Has he seen the entry of the deed at Stationers' Hall? Why the formality of a deed duly stamped, &c.? A simple memorandum in writing is all that the Act requires in assigning the copyright of a picture.

Mr. Brooks informs us of his intention to publish all his new engravings without the publication line. He then will run a twofold risk of losing his copyrights. Just after the publication of the engraving the author of the design might die. Seven years would then determine the copyright. Hogarth's Act has not yet been repealed; and that requires the date of publication and the name of the proprietor to be truly engraved upon the plate, and printed upon every print. Should Mr. Brooks have occasion to take a case of infringement of copyright before a judge, he would find the judge disinclined to construe the Artistic Copyright Act in such a way as to virtually repeal the provisions of Hogarth's Act, when he knows that there was no intention on the part of the Legislature to modify that Act in any way at the time it passed the Artistic Copyright Act.

I am glad Mr. Brooks finds the Artistic Copyright Act so simple that, provided certain things be done, "no counsel or appealing can get over it." I quite agree with him; and it is because these things are not done that I write these letters. He says, "It is simply necessary to have an assignment in writing from the author, and register, and every subsequent assignment must be registered." I am of the same opinion, with the addition that I think the author is bound to register. We are both out of the fog now.

Let us go back to "The Reaper" as a representative case. Mr. Brooks says "The Reaper" was painted in 1863, and was in court as evidence of that fact. Is this true? I did not see it, and am in doubt. Perhaps he carried it in his pocket. It certainly was not produced in evidence. "And it bore the autograph 'T. Faed, 1863.'" Was not this evidence enough? Alas! we do not live in Arcadia. The time when I put confidence in artists' autographs has long since passed away. Had the picture been produced it would simply have proved that it existed, and that it bore thereon "T. Faed, 1863." The picture could not have been evidence of its own authenticity. From Mr. Brooks's statement it appears that the copyright was sold by Mr. Faed to Mr. Gambart, and by Mr. Gambart to Mr. Brooks. Now there was no registration by Mr. Faed or by Mr. Gambart. Upon Mr. Brooks's own dictum, the fact of there being no registration by Mr. Gambart would be a fatal objection. Has Mr. Brooks seen the written agreement, made at the time of the first sale of the picture? I have good reason to believe that the written agreement was not made, and without it the copyright would not pass. The originality of the picture is also open to question. I doubt its being an original work within the meaning of the Act. When proceedings are instituted under a penal act it is only right that the allegations of the prosecution should be required to be strictly proved in accordance with the rules of evidence. This was not done in the case of Mr. Knight.—I am, sir, your obedient servant,

J. Cunnington.

NEGATIVE FILMS CRACKING.

Dear Sir,—It may interest your readers to hear of a fact that happened to some negatives of mine, which I think clearly explains the cause of films cracking. I lately had a quantity of negatives back from my printer's, where they have been for three or four years. They arrived home in perfect safety, but on looking at them three weeks or so after, I found them run all over with rivers, clearly showing that the change of temperature must have been the cause. The room in which they were placed is on the ground floor—a billiard room; it is a little damp, there not being a fire there every day. I may mention that I keep other negatives safe there. I tried removing the varnish, but I found the film was cracked through in places, and it would not go down. I pulled it from the edge with my finger, but it seemed to pull out, having lost all its elasticity, stopping wherever I pulled. In fact, I could do nothing with them, and lost some valuable negatives.—Yours truly, T. K. Barclay.

19, *St. Dunstan's Hill, London, Nov. 28th*, 1870.

[Submitting the film to the vapour of warm alcohol is the best remedy in such case.—Ed.]

TUNICARE AGAIN.

Sir,—A correspondent writes, a few weeks ago, for some one's experience in the use of tunicare, which is very desirable in the present state of doubt enveloping the so-called advantages of that preparation. A month ago I prepared a batch of eighteen half-plates, which I used soon after, and out of that number only two were passable. Thinking that probably there was some impurity in the water, an allusion to which was made in a recent number of the News, I again cleaned another batch, using distilled water for the last washing, and adding distilled water to thin the tunicare (as per directions on bottle); but the plates were not one iota better, many of them being literally crowded with "tear drop" markings.

Would it not be desirable, under the circumstances, if some of the writers of the testimonials were to give us the benefit of their further experience and their plan of working? After all the "dodges," there is nothing like the old-fashioned one of cleaning a plate with some kind of acid, and then using "elbow" grease; at any rate, they can be relied upon when cleaned.—Yours, &c. A Sufferer.

Chester, Nov. 29th, 1870.

Talk in the Studio.

The Woodbury Process.—A new monthly journal is shortly to be published, to be entitled *The Woodbury Gallery of Nature and Art*. It will be illustrated by Mr. Woodbury's process, which has now attained a very high standard of excellence.

Photo-lithography.—A new photo-lithographic process is said to have been discovered in Australia. It seems, however, to be the revival of a method which has been several times patented in this country. We shall give some details in our next.

Tunicare for Dry Plates.—A correspondent says:—"Apropos of your answer to "Senrab Egroeg" in to-night's News, I have had a limited experience of the use of tunicare as a preliminary coating in dry-plate work, and can speak very favourably of it. Some glass plates which I have had by me, coated for more than four months, still give good, clean, adhesive films. The proportions given on the bottles sent out are, however, too dilute. I have paid my yearly visit to the Photographic Exhibition, and am delighted with it. The old Taupenot dry process is especially well represented."

Tinfoil for Packing Dry Plates, etc.—Recent experiment has demonstrated that tinfoil far exceeds other wrapping materials for the preservation of substances acted upon injuriously by air and moisture. Collodion was found almost valueless in preventing evaporation.

Preparation of Tannic Acid.—O. Rothe recommends the following process as the best and simplest:—"Eight parts of pulverized nut-galls [the Chinese galls are preferred by the author] are macerated for two days in a mixture of twelve parts of ether and three of highly rectified alcohol, care being taken frequently to move the vessel containing the mixture. The liquid having been poured off from the residue, the same quantity of ether and alcohol is poured on the powder, and, after a short maceration, the pulpy mass is pressed. The mixed liquids are left at rest for some twenty-four hours, after which there are added to the fluid twelve parts of water. This having been done, the mixed alcohol and ether are removed by distillation; the greenish resinous matter which will be found floating on the residual liquid is removed by filtration; and after that the liquid is evaporated to dryness by means of steam, and the residue ground to powder."—*Chemical News.*

To Correspondents.

E. T. Fletcher.—The registration of a photograph must be effected at Stationers' Hall, where it must be presented personally, with a form properly filled up, stating the necessary particulars. The copyright of a picture continues during the life of the author, and for seven years after. The registration fee is one shilling, and the cost of the form one penny. If you send stamps to our publisher, he will send you some forms, and will also, on receipt of one shilling and threepence in stamps, effect the registration for you by depositing the form which you fill up. It is not necessary to place any intimation on the picture or its mount, but it is as well to put the announcement "registered."

W. W.—Excessive washing before toning renders the latter operation tardy and difficult. Such excessive washing is unnecessary. All that is required is to remove the excess of free nitrate. 2. It is right to replenish your negative bath with a stronger solution, but it is not necessary to iodize the solution used for replenishing. As a rule, the iodide of silver accumulates too rapidly, and the addition of plain solution is a valuable check upon over-iodizing.

Anxious to Know.—Proofs of engravings are those impressions first taken from the plate when the cuttings are crisp, deep, and not appreciably worn. Impressions are taken at various different stages of the plate, and have different designations. Apart from the palpable difference in excellence, the recognized distinction between a proof and a print is found in the fact that the title of the picture is not engraved on the margin. The publication line only appears on proofs, which consists of certain details as to date and ownership, generally in very fine small letters close to the picture. On prints, the name, &c., are fully engraved. At one time, impressions were issued without any lettering; but the facilities for pirating such impressions has put a stop to the practice. A good proof is much superior to a print, and is easily distinguishable by a technical eye; but between the last proof impression and the first print there can, of course, be but little difference. Those which you describe as having the title, &c., are not proofs. The stamp of the Printsellers' Association does no appear on old prints, as the Association is of comparatively recent formation.

J. M. Graham.—The C lenses of the maker you name are especially constructed for rapidity, and although, when stopped down, the work will be excellent for ordinary purposes, yet scarcely equal, we think, to the analogous B lens. The latter we should recommend.

Q. Y.—The illustrations in the *Graphic* and similar papers are doubtless copyright, and the property of the owners; but in copying them for private use we think you run no risk. The wet collodion process will answer best. First make negatives, and then transparencies on wet collodion in the camera the ordinary way.

Glass House C. B.—We do not recommend the practice of varnishing card pictures; the result is commonplace and vulgar. If you wish them glazed, enamelling the surface produces much finer results. You may varnish the prints if you wish, using a benzole or chloroform varnish. Or you may use a spirit varnish; but in that case it must be done in a warm room. As a rule, you must either give two or three coats, or else first give the surface a coating of gelatine, about thirty or forty grains to the ounce, to prevent the varnish sinking in. 2. For a lens, No. 1 of those you name. 3. Chloride of gold is made by dissolving pure gold in nitro-hydrochloric acid. Take twenty drachms of hydrochloric acid and ten drachms of nitric acid; in these, by aid of gentle heat, dissolve half a sovereign. When dissolved, you may evaporate and crystallize, or dilute with water, and neutralize with chalk when you wish to use the gold for toning purposes. You will find fuller details in our back volumes and Year-Books than we can give in this column.

Geo. Lewis.—If the wood be well varnished it will not, we think, be injurious. 2. The stronger solution gives the best keeping qualities; the weaker solution is easier to work. 3. Yes; it is well to have it prepared at least a few weeks beforehand, but the use of ripe collodion does not seem to be of such vital importance in dry work as for wet plates.

Harry.—Thanks; in our next. Can you tell us anything of the persons and offences of those whose portraits you send; especially one with a plaid shawl on the shoulder—No. 9884, we think?

Enquirer.—Graduated tubes are tubes for testing the density of all kinds of fluids. That called the argentometer is weighted and graduated so as to mark the density, and consequently the strength, of solutions of nitrate of silver. The precise purpose for which that you describe may have been graduated it is impossible to tell from description merely.

A Sufferer.—The cracking of negative films is a subject which has caused much perplexity to many photographers, and the cause remains to some extent undecided. The most certain cause which can be traced is change of temperature, especially if dampness also come into operation. Another probable cause is imperfect washing after fixing; not merely insufficient washing to remove all the fixing solution, but washing with common water, which may contain traces of hygrometric salts. If the purity of the water is doubtful, it is well to give the negative a final rinse with distilled water. We have no reason to doubt the collodion in such cases, but we should be tempted to try a change of varnish. The trouble is a very perplexing one: in our own hands it never occurred but once, and then it was with some negatives which had been lent to us, which, being stored away with our own, cracked, whilst our own remain unchanged. 2. You can obtain the materials of any artists' colourman. Try Newman, Soho Square, and also obtain their shilling manual entitled "Harmonious Colouring applied to Photographs.".

J. J. R.—In retouching negatives with pencil, both stippling and hatching are used, but chiefly hatching, softening the lines with a stump, as in crayon drawing. In our last volume you will find some articles by Mr. Croughton, giving valuable instruction as to the practical details. If you have not the volume, let us know, and we will ascertain if the number is in print. In our last Year-Book there is an article by Mr. Croughton, and in the former year's annual one by Mr. Mayland, giving full instructions. There have also been several articles during the present year in the News.

Print.—There are several engravings in existence of Sir Joshua Reynolds's "Samuel." That you describe has not any especial value. It may be skilfully coloured, and interesting on that account, but coloured engravings have not a high value as works of art.

J. C. B.—If you use powdered charcoal it will not readily pass through a flannel bag. Or you may use it in small lumps instead of powder. But permanganate of potash will effect the end more perfectly, and without great expense. 2. In taking a plaster cast of anything where there is under-cutting, the only plan is to take it in parts, which may be subsequently joined; the portions of the cast may then be easily removed. If the brooch be slightly greased the plaster will not stick. The plaster will set hard in a few minutes. It is simply made into the consistency of thick cream or batter, and poured on the mould at once, where it very quickly sets. You may run lead into the plaster cast, but there is some risk of splitting it with the heat. 3. Yes.

Rustic.—The simplest mode of adapting an ordinary camera to reflecting purposes consists in placing a mirror at an angle of 45° to receive the image. This image will then be thrown on a piece of paper placed over an aperture in the top of the camera over the mirror. There are several modes of making a reflecting camera, but unless you are familiar with such work you will obtain what you require better of a maker of philosophical instruments than you can make it for yourself. 2. Canada balsam dissolved in benzole, or wax applied by the aid of heat.

Senran Egroeg.—It is very probable that it may; but not having tried it, we cannot with certainty say. 2. It is a problem the solution of which will be found when you come to develop. The distilled water is not always imperatively necessary, but it gives safety. The gum plates should, as a rule, require about three times as long as wet, but full exposure is generally a safe course with dry plates.

Ag D.—We believe, of Mr. Hughes, 379, Oxford Street.

W. W.—Thanks; we shall use the brief papers shortly, probably one in the Year-Book. We shall have pleasure in trying the preparation.

Looker-on.—In our next.

Vulpes.—Thanks.

A Subscriner.—Fix and wash the negative, then treat with a five-grain solution bichloride of mercury until the film acquires a uniform grey; wash, and then treat with a two-grain solution iodide of potassium. This will give great density. If still further intensity be required, pyro and silver will readily give any amount if applied after the iodide of potassium. Of course, wash well between each application.

An Amateur.—Thanks.

F. W. P.—The agency for Dubroni's apparatus is in Regent Street, but we do not remember the number. It is a clever toy, but not of much practical service.

A New Subscriber.—Your question is scarcely sufficiently clear. Do you wish for personal instruction? If for published formula and details, we will refer you to various articles published in our pages. You can enlarge, within certain limits, without an enlarging camera. State clearly what you wish to do, and we will give you the necessary information.

Several Correspondents and Articles now in type in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 640.—*December* 9, 1870.

ENT OF

CONTENTS.

PAGE
Albums for Card and Other Portraits 577
Alleged New Photo-lithographic Process 577
Obituary—The Duc de Luynes 578
The Exhibition of Photographs 578
Echoes of the Month. By An Old Photographer 579
Durable Sensitive Carbon Tissue. By H. Baden Pritchard...... 580
Photography and the New Art Professorship. By S. Thompson 581
On a Means of Preventing the Splitting of Negative Films. By Dr. H. Vogel 582
Photography in America. By Dr. H. Vogel 5
The Formation of the Latent Image. By Elbert Anderson...... 584
Correspondence.—Photographs of Prisoners—Piracy and Copyright—Tunicare for Dry Plates—Tunicare for Nothing—Litharge and Glycerine as a Cement—Albumen for Preliminary Coatings 585
Proceedings of Societies.—Liverpool Amateur Photographic Association 587
Talk in the Studio 587
To Correspondents 588

ALBUMS FOR CARD AND OTHER PORTRAITS.

It seems somewhat late in the day to ask for improvements in albums for card portraits, but still the need exists. Notwithstanding that manufacturing houses have now for ten years past been producing albums in almost every possible size and style, from the cheapest to the most costly, from the simplest and plainest to the most elegant and richly ornamented, in one particular there has been but little, if any, change: the aperture has been of one size and proportion. Now, it must be apparent, on a moment's reflection, that the same sight proportion cannot be equally well suited to all kinds of pictures. Full-length figures, large busts, medallions, and vignetted heads must, in order to produce the best effect, receive different treatment, each having a certain proportion of margin by which its effect is rendered most pleasing.

Mr. Faulkner, who, as many of our readers know, is an accomplished artist who has for some years devoted his attention to photography, has brought this question under our notice, and has favoured us with an example of a kind of album of which he has had some made for his own use; and he points out the fact that it would be a great boon to photographers and the public if manufacturers would introduce something of the kind into trade. As Mr. Faulkner very pertinently observes, year by year increased excellence is demanded of the photographer, and he steadily endeavours to meet the demand by supplying work of a steadily growing higher class; but the *entourage*, upon which, when a picture is perfect, so much depends for showing that perfection, remains the same. He suggests that albums should be made with suitable margin of toned paper, and with apertures of different size and proportion to suit the character of the different pictures. The cell may, of course, be made to receive the regular sizes—card and cabinet—but with sight apertures varying in size and proportion. The sizes of the apertures in the album with which Mr. Faulkner has favoured us are as follows:—4 inches by $2\frac{1}{2}$ inches; $3\frac{5}{8}$ inches by $2\frac{3}{8}$ inches; and $3\frac{5}{16}$ inches by $2\frac{3}{16}$ inches. Each of these will, of course, receive properly enough a full-length figure; but some figures look much better in the small than in the large apertures, whilst with vignettes and medallions a scarcely conceivable improvement or deterioration may be effected by changing different pictures into the apertures of different proportions.

Photographers may possibly be disposed to say that this is a question for manufacturers, to whom our advice should be addressed. But this is not so: it is a matter in which demand must precede supply. If photographers once let it be understood that they desire improvement in a certain direction in relation to their albums, manufacturers will not be slow to meet the demand. It rests, then, with photographers to consider the matter well to determine precisely what they want, and to make known the want to those concerned, and the supply will follow. Neat albums with toned paper, with apertures of at least three proportions for cards, and possibly the same for cabinet pictures, are, we think, desirable, and, as a rule, they are better without lines or borders round the apertures. If any of our readers have further suggestions to make on the subject we shall be glad to hear them.

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ALLEGED NEW PHOTO-LITHOGRAPHIC PROCESS.

The Sydney correspondent of the *Times*, speaking of the projected contributions from New South Wales to the International Exhibition of 1871, refers to examples of a new process of photo-lithography which may be expected, the method being described as a great improvement on previous processes of the kind. We shall look with interest for the examples, and shall, of course, hail with satisfaction any improvement in this branch of the art. We fear, however, from the details furnished, that the process is not so novel as our Sydney friends imagine. It appears to be an old friend, originally patented by Mr. Lewis; but also independently discovered about the same time, or soon afterwards, by Mr. Hannaford, who proposed it in our pages. Some years afterwards it was again independently discovered and patented by Mr. Toovey, of Brussels. The method of obtaining an image on the stone is by transfer, but the mode of transfer is essentially different from that of Mr. Osborne and others working in the same direction. Paper prepared with gelatine, or gum and bichromate, is exposed under a negative. Instead, then, of being inked, it is laid, face downwards, in contact with a lithographic stone, covered with damp paper, and submitted to pressure. The result is, that the unchanged gum or gelatine, being moistened by the damp paper, is transferred by the pressure to the stone, forming a reversed image in gum or gelatine on the stone. This forms a resist, or stopping-out material, so that when the paper is removed, and the stone is inked, those portions only not protected by the reversed image of gum take th ink, a direct image in fatty ink being thus formed on the stone. After this is effected, the resist or transferred image is removed by washing, and the stone is ready for work. We proceed to quote the *Times* correspondent. He says:—

"There is one invention which will certainly be represented in London, and I may now refer to it. It received the distinction of a silver medal. Mr. John Starkie, engaged at the Government printing-office, has produced a very valuable process known as photo-lithography, by which engravings can be reproduced to any extent, and at little cost. Photo-lithography, in different forms, has been practised for a number of years. One of the most practically useful of the different processes was invented simultaneously in England and in Melbourne in 1859; in England by officers of the Ordnance Survey Department, under Colonel Sir Henry James; and in Melbourne by Mr. Osborne, then employed under Professor Neumager at the Observatory. Mr. Osborne took out his patent in Victoria in 1860, and the Government then paid him £1,000 for the right to use it. This process has been in constant use in Victoria for the last ten years, and has greatly cheapened the production of maps, plans, mechanical drawings, and such things. The drawing to be copied is first photographed on glass in the usual manner; from the negative a print is then taken on paper in the usual manner; from the negative a print is taken on paper prepared in the manner set forth in the specification; the print is then covered with a thin film of greasy ink; it is next floated a minute or two on hot water, then laid on a glass plate, and the superfluous ink washed off with a sponge. It is found that the ink adheres permanently to those parts that had been affected by the light through the negative, while it comes freely away from the parts not so affected, leaving thus a reproduction of the original drawing. This operation requires great care and delicacy of touch. As soon as the paper is dry, it is ready to be transferred to a lithographic stone, and printed off in the usual manner. A few years ago Mr. Richards, the Government printer, went to Melbourne to see the process, and on his return induced Mr. Starkie to try to produce something more perfect. After working a year or two, he succeeded in producing a process differing in this important particular from Osborne's: that no ink is applied to the photo print; but this print, on being taken from the negative, is laid without further manipulation on a stone, and passed through the press. The paper, being moistened on the back with a sponge and water, is then peeled off, leaving a faint impression of the drawing on the stone. A thin ink of a peculiar character is then rubbed into the stone, which absorbs it only in those parts corresponding to the lines of the drawing; and the superfluous ink being then washed off, the stone is ready to be inked and printed from as in the ordinary process of lithography. Within a few minutes after the photo print is taken, a proof can be drawn from the stone. This new process is at once more speedy, less delicate in manipulation, and capable of producing finer work than Osborne's. Mr. Starkie can copy effectively and reduce any engraving, drawing, or lithograph, where the work consists of distinct lines or dots, but cannot at present produce good results from photographs of natural objects, or from drawings where the shading is continuous and not broken up into lines. I have seen reproductions of "Byron's Dream," engraved by J. T. Willmore from Sir C. L. Eastlake's painting, of marvellous delicacy. The reproduction looked every whit as good as the original proof."

We shall be glad to find that Mr. Starkie's work is as good as it is described, but we scarcely see in the method any reason for the production of finer line work than that produced by the ordinary mode of transfer.

OBITUARY—THE DUC DE LUYNES.

Our readers will learn with deep regret that one of the recent victims of the war is a gentleman to whom photography is very largely indebted. In the recent battle before Orleans the Duc de Luynes was killed. His deep interest in the advancement of photography, and especially in securing permanence for its results, induced him to stimulate experiment and discovery by the repeated offer of prizes for improvements in this direction. His influence will be missed, not only in French photographic circles, but in the photographic world generally.

THE EXHIBITION OF PHOTOGRAPHS.

Portraits.

We have already referred to several of the more important examples of portraiture contributed to the exhibition in Conduit Street, but we may add a few more words on the subject. Before referring to individual examples, we may make one or two observations on a topic connected therewith, to which allusion has already been made in our correspondence column. We refer to the question of touching, both on the negative and on the print. Without entering on any discussion as to general propriety of retouching, we may repeat here what we have written in another place in reference to this exhibition: "One especial word of praise is due at the outset. The prevalent system of working on the negative—admirable when used with judicious reticence, most pernicious when used so as to soften away all trace of life and character—is, in no instance that we have seen, carried to excess in the works exhibited. We see no faces worked into the unmeaning smoothness of a barber's wax dummy. In many of the best portraits exhibited there is no trace of touching at all, and in others it is chiefly used to give transparency to deep shadows, by the introduction or strengthening of reflected light, and occasionally to extend legitimately the range of the gradation, or to modify the defects inherent in the photographic rendering of colour." In many cases there was no retouching, and in many others there was much exceedingly judicious and skilful retouching; and, maintaining our old dictum that success is the touchstone of legitimacy, we conceive that a good result, however produced, is always worthy of commendation.

Nothing is, however, more mortifying to a skilful photographer who, by a combination of the nicest appliances—such as skilful lighting, nice chemical conditions, proper exposure, a lens suited to the work, fine judgment in developing, and extreme care in printing—has secured unusual refinement and artistic qualities in his portraits, to learn that it is attributed to retouching, and that by an engaged hand. We think it is right, therefore, for the encouragement of others as well as for truth's sake, definitely to affirm that the portraits exhibited by Mr. Blanchard, to which reference or insinuation has been made as the results of touching, were in no sense examples of this class of work. In many cases there was no retouching at all; in others there was a little work on the negative, applied with a pencil by the photographer himself, in no case exceeding five or ten minutes' work. One of his most charming portraits (28)—a standing figure of a lady in white drapery, gracefully posed, and supported by admirably arranged accessories—was rendered especially effective by certain brilliant touches of high light, giving light and life to the generally fine chiaroscuro. We heard this skilful arrangement of light and other good qualities on the picture attributed entirely to the pencil of the artist, whilst the fact is, that the picture is, both in negative and in print, entirely untouched.

Of examples of skilful and judicious touching Mr. Marhall Wane, of Douglass, Isle of Man, and Mr. Warwick Brookes, of Manchester, have some singularly fine examples. Mr. Wane shows many fine portraits, the negatives of which are manifestly worked upon, but so skilfully that we would not willingly see one touch removed; one (No. 231) might be selected as a type of perfection in this class of work. The same may be said of many of those by Mr. Warwick Brookes: the work of the pencil and the work of the lens are so judiciously united that any divorce in such case would be an artistic wrong. His study, No. 160—the head of a beautiful woman admirably posed and lighted, treated throughout with admirable photographic skill—has just received such supplementary aid from the retoucher as may best enhance, and in nowise detract from, the true photographic excellence of the work, and constitute it a real work of art.

Of precisely the same class, and meriting similar praise, were some admirable examples of portraiture by Mr. Gutekunst, of Philadelphia. The portraits are of very large size, being on plates about nineteen inches by fifteen, and are singularly grand in treatment: massive and rich, they are also delicate in the highest degree. The fine head of

E. L. Wilson, our able *confrere* and *collaborateur*, is, in every way, a noble piece of portraiture, full of character. That of Mr. Edwin Booth, the American tragedian, is most excellent. The photography is perfect, and the retouching most judiciously managed, giving admirable modelling, solidity, and texture to the head. A frame of card heads by Mr. Gutekunst arrived too late to be hung, a circumstance to be regretted, as we have never seen a superior collection of card portraits, pose, treatment, and rendering being alike admirable.

Amongst the examples of portraiture in which size is an important element, few finer things have ever been exhibited than this year's contributions by Mr. Slingsby, of Lincoln. These were on plates twenty-four inches by eighteen, but, being nearly full-length figures, the size did not involve any approach to coarseness in rendering. In all photographic and artistic qualities these portraits left little to desire. It is worthy of remark that these large portraits were taken within a week of the opening of the exhibition, one receiving an exposure of only forty seconds, and the other, at three o'clock on a November day, an exposure of fifty-five seconds. This rapidity Mr. Slingsby attributes to the excellent construction of his new studio.

The examples of portraiture with natural landscape background exhibited by Mr. B. J. Edwards and by Messrs. Robinson and Thompson were exceedingly fine. Those by Mr. Edwards were admirable illustrations of the efficiency of his combination printing-frame, and were also capital examples of effective portraiture, in which the treatment of the figure was in admirable keeping with the character of the scene. Some larger portraits by Mr. Edwards, with what is known as the Salomonesque treatment, were very fine indeed. The cabinet portraits with landscape backgrounds of Messrs. Robinson and Thompson were fine examples of pleasing portraiture, photographic and art qualities alike being good; the landscape backgrounds are admirably chosen, and in all cases compose well, giving fine pictorial quality to the work. A frame of card portraits by the same firm, apparently from negatives judiciously touched, are exceedingly perfect.

In delicate portraiture, the vignetted cards by Dr. Wallich take very high rank, a singular refinement being communicated to the various heads, many of which, being of well-known men of science, are noticeable for the excellence of the likenesses. A frame of miscellaneous portraits by Mr. Andrews, of Swansea, contains much work of high photographic and artistic excellence, and in cases where we can verify from personal knowledge, the portraiture is admirable.

There were few more charming features of this exhibition than the number of instantaneous portraits of childhood and babyhood. In this branch Mr. Faulkner is unquestionably *facile princeps*. To say that in all cases the photography is admirable, that every little rounded limb is perfectly modelled, that the soft, peachy texture of blooming childhood is rendered with rare truth and delicacy, and that all technical qualities are perfect, is to mention the lowest qualities of these gems. It is the very life of childhood which is caught in almost every variety of pose and arrangement, in all cases natural and happy. In all cases, a true feeling for nature and highly cultivated artistic skill are abundantly manifest. A complete set of Mr. Faulkner's studies of childhood and infancy would form one of the most charming photographic albums which can be conceived. The little collection of instantaneous portraits of children by Miss Pritchard is scarcely inferior, except in point of numbers, the happy skill with which the smiling roguish little ones—in some cases babies of a few months—are portrayed is very admirable. Mr. B. Wyles' portraits of children were very fine.

Mr. Netterville Briggs exhibited some fine Salomonesque portraits, in which, however, the retouching was carried to the extreme verge of permissibility. Some portraits by W. and A. H. Fry, of Brighton, were quiet, refined, and in fine taste. Mr. H. Ashdown's portraits were good, but the contrasts in some were a little too vigorous. Mr. Thrupp, Mr. Dixon, Mr. Syrus. Mr. Brigham, S. and E. White, Barnes and Son, G. H. Britten, all exhibited portraits possessing good qualities.

Amongst the most interesting specialities in portraiture is the enlargement, by Mr. Albert Moore, of Philadelphia, from a negative by Mr. V. V. Horton, operator in Brady's Gallery, New York, which took a gold medal, offered by Mr. Moore for the best negative for camera work. The negative was described by the referee as "on a half-plate glass, unvarnished, clean, forcible, sharp, well timed, and exceedingly brilliant—a little too transparent to make a first-class contact print, but exactly suited for a solar enlargement." In photographic and artistic qualities it is very fine indeed. The photo-crayon portraits of Mr. R. H. Preston are the most perfect exhibited; but those of Mr. Wyles, and those of Vandyke and Brown, have excellent qualities. The enlarged portraits in opal, by Bullock Brothers, of Leamington, are fine in many respects, and of excellent tone. There is no statement of the mode of production; but a slight lack of transparency in the shadows gives them the character of untoned, developed prints. Few things in the exhibition are finer than the enlarged portaits styled "Piercytypes," exhibited by Mr. F. Piercy. The principle upon which the aid of lithography and of the artist's pencil are employed by Mr. Piercy to give higher artistic value to photographic portraiture, we have before explained; the present contributions admirably illustrate the excellence of the method, and the artistic skill with which it is applied by the inventor of the method. M. Bondonneau's varied contributions contain much that is excellent; we may especially mention the admirable reproduced portrait from a small faded print. The Passion Play portraits by Captain Bedford Pim are full of interest.

Mr. Window's untouched enlarged portraits in carbon are marvellous as examples of enlarged work, far surpassing the results commonly produced. We believe that there is some novelty in the method employed, the details of which we are not as yet acquainted with; but the delicacy, vigour, and modelling of the prints are very satisfactory. They have more the quality of fine direct prints than enlargements. The colour is admirable.

We must conclude our notices by mention of results of special processes, and methods, reproductions, and apparatus, next week.

ECHOES OF THE MONTH.

BY AN OLD PHOTOGRAPHER.

The Exhibition and Future Improvements—Prizes—A Photographic Art-Union—Adam-Salomon's System of Lighting and Alcove Background—The Eclipse Expedition—Copyright and Piracy—Stills—Fog—Photo-Mechanical Printing.

The chief photographic event of the month, if not, indeed, of the year, has been the exhibition in Conduit Street. It has, perhaps, been echoed already sufficiently in the photographic press, in the general press, and by many lips. It certainly won golden opinions from all sorts of people, and was certainly one of the most instructive, as well as most pleasing exhibitions ever opened. It was so satisfactory in every way, that anticipations of possible improvements in future years seem almost ungrateful; and yet that seems the inevitable tendency of success. No sooner does anything turn out well, probably far exceeding anticipation, than one naturally begins speculating on possible improvement. Well, I suppose that is the condition of progress; and I may, in echoing the past, be guilty of no impropriety in saying what I should like to see in future.

First, I should like all contributions to be sent sufficiently early to permit careful selection, rejection, and arrangement; and I should like the committee appointed to be Rhadamanthine in their decisions. Not that I impeach the work of the committee in the last exhibition; but if they had had more time it might possibly have been managed still better. There were some instances in which good pictures failed to be hung, and also cases in which a large number of large pictures occupied a large space in the line, whilst small delicate pictures required visitors to go down on their knees to inspect them. The first improvement I should like to see is in this matter.

Second, I should like the question of medals to be reconsidered. I know that much can be said on both sides of the question, and I am not sure that the brotherly emulation, into which nothing of envy, jealousy, and uncharitableness can enter, is not better promoted by competition in which general public approval is the only crown, than by one in which an expressed decision and a prize may be obtained. Still, it cannot be denied that the hope of reward stimulates and sweetens labour, and that the hope of securing definite recognition is a legitimate incentive to effort. And further, as the production and framing of pictures for an exhibition costs time, thought, and money, the chance at least of a tangible return is a legitimate object of desire. Our society has the dies; surely the bronze impressions could not be very costly!

Third. A suggestion was* just mooted some time ago, as I learn from our Editor, that an art-union might be formed in connection with the exhibition, which might be made useful to exhibitors and the public. I believe that the French have had such a system generally in connection with their exhibitions. How they have managed them I do not know; but I think the plan I have heard something of as suggested for adoption here comprehended an idea of this kind. A payment of half-a-guinea should be made for each art-union ticket; for this a photograph of a given value would be received. All exhibitors willing to supply prints to the committee for a given sum—say half-a-crown each—could have their prints marked as available for selection by half-guinea ticket-holders. The balance of the receipts would go to pay for prizes of say one, two, three, or five guineas value, to be selected from the pictures exhibited. Such a system well carried out would be equivalent to a distribution of medals, or the two could be combined, pictures taking medals being those eligible for distribution to members of the art-union.

I think that this idea is well worthy of consideration, and would, I am sure, please many. There were, for instance, many of the pictures at the late exhibition in relation to which I certainly coveted, if I did not break outright, the tenth commandment. I would gladly have paid a reasonable sum for copies, but as they were not for sale I could not have them. Some of Blanchard's grand portraits of charming faces; some of Robinson's gems, as much poems as they were pictures; some of Manners Gordon's lovely bits, his view on the Thames especially; some of Marshall Wane's sweet demoiselles; some of Warwick Brookes's noble mezzotint-like heads, and many more. Now it is possible that an art-union scheme might help me to some of these, and would, doubtless, help to pay the expenses of the exhibition, which, however, I am glad to learn has been effected, or thereabouts, by admission fees and sale of catalogues.

I wonder, will any manufacturer of enterprise undertake to introduce into the market the wonderfully complete scheme of lighting and background which Adam-Salomon has had the liberality to give through you to the public. I can see how complete and satisfactory its working must be, and I cannot but think that many customers would be found if the thing were accessible without all the trouble of making an ordinary joiner understand what is wanted. I should think it could be made in certain pieces, easily packed, and easily put together. I hope some one will attempt it. The term you have applied to it, an "[illegible] background," is explicit so far as the idea of background alone is concerned; but it wants some additional term to imply that it includes a system of lighting as well. I cannot suggest a term. I can only express a want.

And so England is not to be recreant in eclipse observations after all. Well, every one must be glad, and it is not worth while now to enquire too closely where the fault rested as to the failure which seemed imminent. It is grieving enough to know that "some one had blundered," and that by the blunder the success of the matter has been perilled. I heard that offers to photographers to join in the observing expeditions were going a-begging within a few days of the departure. And no wonder; there were no funds to offer remuneration: the duty must be accepted as a labour of love. Had there been time enough, no doubt there are many able amateurs who would willingly have accepted the conditions; but when only a few days remained, it certainly became a risk. Fortunately, I believe, capable men were found, and we must hope for the best in the results.

The recent discussion on the question of copyright in your pages serves to illustrate one point, if nothing more: the miserable uncertainty and complexity of the whole law on the subject. Further, it seems tolerably certain that the administrators of the law incline generally to give the benefit of a doubt to the holder of the copyright; and, more, I fancy society generally will endorse the decisions. Your correspondent, Mr. Cunnington, is doubtless cunning of fence, and if there be a weak joint in the armour of the maintainers of copyrights, he will probably find it; but few people will sympathise with those who make a raid on the property a man has bought and paid for, because the raider alleges that there is some flaw in the title to the property. If all landed property were to become common, because of some doubtful circumstances connected with its original title, why, Chaos would come again!

Referring to the subject of law, can any of your legal readers, or any one familiar with the law and practice of the Inland Revenue Department, state precisely the position of a photographer who employs a still to purify water for his own use? It is popularly understood that the possession, without licence, of a still of any kind, and for any purpose, is a penal offence. Is this so? And, if so, how and where is the line to be drawn? I have occasionally distilled water by merely tying a piece of flannel to the spout of a tea-kettle, and permitting the water to boil. The water runs down into a vessel at the other end of the strip. Is this an illegal act? If it is, does the illegality consist in saving the water instead of allowing it to pass off in steam? If it is not an illegal act, would it become illegal if I adopted one of the very simple appliances you have recently described for producing distilled water? Some definite or authoritative information on this subject would be very useful and interesting.

As I write, I am tempted to fancy everything in the shape of photography must be coming to an end for ever. In London, fogs of the gloomiest description have prevailed for weeks past, rendering photographic operations impossible. The numerous French exiles who have never visited this country before will wonder how the art has ever had an existence amongst us.

Photo-mechanical printing processes must be in the ascendant during such weather. I am glad to learn that a new art periodical devoted to one method is announced; its nature may be guessed from its title: *The Woodbury Gallery*. The other journal of the kind already in existence (*Art*) is chiefly illustrated by Mr. Edwards's "Heliotypic" process. It is very capital, and, I am glad to learn, very successful.

DURABLE SENSITIVE CARBON TISSUE.

BY H. BADEN PRITCHARD.

During the past eight or ten weeks the printing in the Woolwich Photographic Establishment has been conducted entirely with tissue received from the factory in a sensitive condition. I am not aware whether the Autotype Company—who are the makers of this tissue—are wont to prepare it in any different manner to that ordinarily adopted, but it certainly remains serviceable for a period of ten days or a fortnight, and has sometimes actually yielded good prints at the end of three weeks. Its manipulation is conducted in the same way as tissue sensitized by the operator, but the time of exposure is somewhat more lengthy than that required by the freshly sensitized material. It is very questionable, however, whether this is really a disadvantage, for, in quick printing negatives, it is sometimes difficult to calculate the exact amount of exposure with an ordinary silver paper photometer.

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* This was in our early days.—Ed.

The prints obtained from tissue to which the bichromate has been added during manufacture appear, however, to be finer and more delicate than the results given by the material prepared in a non-sensitive state. This point struck me very forcibly some time since on the examination of specimens produced by Braun, of Dornach; Sarony, of Scarbro'; and by the Autotype Company itself, all of whom employ a ready sensitized tissue. Some of the carbon pictures of Braun are not, it is true, quite so free from those minute specks of pigment or impurity so well known in the first days of carbon printing, but, with the exception now and then of a defect of this kind (due, probably, to insufficient grinding of the colours, for Braun employs steam power for the purpose), the gradation of tone is very perfect. On this account I besought the Autotype Company to supply me with tissue ready sensitized, with a view to making a practical trial of the material, and I am happy to say that the plan has succeeded beyond expectation, for not only do we find the material remain serviceable for some considerable period, but there is actually a less amount of loss and failure than was previously the case. The bands are forwarded two or three times a week, and are, unfortunately, more than four-and-twenty hours on the road, so that it is generally not until the third day after manufacture that its manipulation can be proceeded with. As I have said, however, this matters little; and, practically, a week passes before a supply is all used up.

The gain effected by this mode of proceeding is immense. No operation of sensitizing is necessary—a very tedious task, as also one of some risk—and valuable space is not occupied for a considerable period by moist and dripping tissue. No fear need be entertained for the loss of a batch of tissue from over-heating or imperfect screening from light, and less waste of material takes place from the fact that a second cutting up the sheets to suit the different sized plates may be dispensed with. Altogether, the operations are considerably simplified, for the tissue, as soon as unpacked, may be cut up and placed in the printing-frames. Of course, the mere addition of the bichromate to the tissue does not materially affect its cost of production.

A word or two may be said in regard to the employment of the zinc plates upon which the prints are transferred. It is found that a freshly grained surface does not yield such perfect results as a plate which has been in use for some time. The first prints taken off a new plate almost invariably show some appearance of dirtiness in the whites, due, in all probability, to very fine metallic particles adherent to the picture; and these are never to be remarked when several impressions have been taken from one surface. Indeed, in my opinion, the prints themselves gain not only in brilliancy, but also in the transparency of the shadows, after the grained surface has been somewhat worn. A polished surface gives an unpleasant glaze to the face of the picture, but in a well-used grained plate there is just sufficient roughness to obviate this glaring appearance. On no account should zinc plates be employed which have not been planished, as not only do the irregularities in the surface injure the aspect of the print, but the minute defects or honeycombing, which should have been beaten out by the hammer, give rise to imperfections, and even ruptures, in the film.

Some experiments are now being undertaken with the single transfer process, and I shall be pleased to communicate my experience of the practical value of this mode of proceeding on an early occasion.

PHOTOGRAPHY AND THE NEW ART-PROFESSORSHIP.

BY S. THOMPSON.

THE art-history of this country may be said to date from little more than a century ago, and the native school begins, as of right, with William Hogarth, who died in 1764. Prior to Hogarth, English painters were only imitators of foreign masters, chiefly miniaturists, who worked in little on the tracks of Holbein and others. Living artists were regarded as little above house painters, and gained a poor subsistance by imitation of old masters, then greatly in vogue, supplemented by wall decoration, or by miniature painting. In 1768 the Royal Academy was established. Just a century has passed away, and another step has been taken which may have a great influence upon art, and the direction art-patronage may take, by the founding of a permanent art-professorship in the Universities of Oxford and Cambridge under the Slade bequest, and the accession to the professorial chair at Oxford of the greatest art-critic of our time.

Professor Ruskin, feeling that as his lectures will become, by their annual publication, a permanent contribution to our art-literature, and perhaps take a place as an English classic, like "Reynolds's Discourses," has thrown his whole strength into his task, and has roused his undoubtedly great powers to the prosecution of the novel duties it involves, with a degree of energy and spirit to which he has for some time been a stranger.

We have before us the first volume, embodying the result of these labours, "Lectures on Art, delivered before the University of Oxford in Hilary Term, 1870." They have been most extensively reviewed, as many of the readers of the NEWS will be aware. Their merits and beauties have been already fully discussed. It remains to us, therefore, only to review those passages in which photography, its uses, and influence on art are regarded or defined by the new Professor of Fine-Art. Its position in the arts we care not to discuss. To claim for photography more than its due, or to place it higher than it can sustain itself, would be unwise. While an art is growing it cannot well be placed or classified. We are reminded of Mr. Reade's reply to Admiral Symth many years ago, when photography was novel enough to be discussed by the Royal Society. To some objections urged by the gallant admiral, Mr. Reade retorted by observing that he (his opponent) was *born* a baby. Photography may say with Lavater on another subject, "I can wait"—this is a high attainment. In short, the correct principle is, that as long as an art grows we have no right to limit its capabilities; but directly it ceases to do so, and reaches its climax, a standard can be taken, and the thing classified and catalogued like a specimen in a collection. Some arts or inventions cease growing in a comparatively short time; they no longer advance, but revolve on their axes. Who can say of photography that the climax of growth has been attained?

The simple fact that photography is of such importance as to occupy a place in these discourses argues that the art has acquired a potentiality which cannot be ignored in any work teaching of the art-history and development of the age, and even adverse criticism is better than unrecognition. Prof. Ruskin is not very flattering, and, perhaps, scarcely fair or logical in his estimate, considering the extensive use he makes of photography to illustrate his lectures.

One of the leading features of his plans is to iniatiate what he entitles "a standard series of examples," to be deposited in the university for reference "as types of what is insuperably good." There is to be a severe exclusion of all second-rate examples, and the series is at first to be greatly restricted in its extent. It will be formed of original drawings, or engravings, and photographs; we believe, chiefly the latter. *Inter alia*, he regrets that the schools of line engraving, which had reached in England an executive skill of a kind before unexampled, has of late lost much of the more sterling and legitimate method, and remarks: "Still, I have not the slightest fear that photography, or any other adverse competitive operation, will, in the least, ultimately diminish—I believe they will, on the contrary, stimulate and exalt—the grand old powers of the wood and steel."

For the comfort and encouragement of portraitists, he holds that the best pictures of the great schools are all portraits. The real strength of all the greatest men is tried to the utmost in such work, and he holds that in nothing else is it brought out so thoroughly as in painting one man or woman, and the soul that is in them, "nor that always the highest soul, yet seen through, to the poor best of it, by the masterful sight." Whatever is best in the great compositions of the past depended on portraiture, and the study necessary to understand invention will also convince you that the mind of man never invented a greater thing than form of man animated by faithful life. "And, therefore, portraiture of living men, women, and children—no more, of saints, cherubs, or demons." "So now I have brought for your 'standards' of perfect art, a little maiden of the Strozzi family, with her dog, by Titian; and a little princess of the house of Savoy, by Vandyke; and Charles the Fifth, by Titian; and a queen, by Velasquez; and an English girl in a brocaded gown, by Reynolds; and an English physician in his plain coat and wig, by Reynolds; and if you do not like them, I cannot help myself, for I can find nothing better for you."

With the following passage, which forms the eloquent peroration to the chapter on "Light," there is much with which we can agree, though at first sight it seems adverse to our art, but is really, on analysis, little more than an eloquent enforcement of the well-recognized principle that nothing should supersede the study of nature. This no one would dispute, and there was scarcely any necessity for the back-handed blow at photography to give point to its enunciation, unless he wished to deprecate the inordinate use of photographs by students.

"Let me, in closing, recommend to you once more, with great earnestness, the patient endeavour to render the chiaroscuro of landscape of the manner of the 'Liber Studiorum;' and this the rather because you might easily suppose that the facility of obtaining photographs which render such effects, as it seems, with absolute truth, and with unapproachable subtlety, superseded the necessity of study, and the use of sketching. Let me assure you, once for all, that photographs supersede no single quality nor use of fine art, and have so much in common with nature, that they even share her temper of parsimony, and will themselves give you nothing valuable that you do not work for. They supersede no *good* art, for the definition of art is 'human labour, regulated by human design,' and this design, or evidence of active intellect in choice and arrangement, is the essential part of the work, which, so long as you cannot perceive, you perceive no art whatsoever; which, when once you do perceive, you will perceive also to be replaceable by no mechanism. But, further, photographs will give you nothing you do not work for. They are *invaluable* for record of some kinds of facts, and for giving transcripts of drawings by great masters; but neither in the photographed scene, nor photographed drawing, will you see any true good, more than in the things themselves, until you have given the appointed price in your own attention and toil; and when you once have paid that price, you will not care for photographs of landscape. They are not true, though they seem so. They are merely spoiled nature. If it is not human design you are looking for, there is more beauty in the next wayside bank than in all the sun-blackened paper you could collect in a lifetime. Go and look at the real landscape, and do not think you can get the good of it in a black stain portable in a folio. But if you care for human thoughts or passion, then learn yourselves to watch the course and fall of the light, by whose influence you live, and to share in the joy of human spirits in the heavenly gifts of sunbeam and shade. For, I tell you truly, that to a quiet heart, and healthy brain, and industrious hand, there is more delight and use in the dappling of one wood-glade, with flowers and sunshine, than to the restless, heartless, and idle, could be brought by a panorama of a belt of the world, photographed round the equator."

ON A MEANS OF PREVENTING THE SPLITTING OF NEGATIVE FILMS.

BY DR. H. VOGEL.*

Communicated from the Photographic Studio of the Royal Industrial College of Berlin.

Many complaints have been recorded in respect to the rising and splitting of negative films, and many also have been the reasons assigned for the appearance of the phenomena; but a means of preventing such disagreeable occurrences when the negative gives signs of this weakness has never yet been published. It is a well-known fact that these defects are of two kinds: the so called mole-markings, and hair fissures; the former are appreciable risings of the film, while the latter appear to be transparent crooked lines upon the negative. The mole-markings may be removed by placing the varnished face of the negatives downwards upon a shallow dish containing alcohol, which, after a period of about twelve hours, moistens the film sufficiently to allow the same to return to its original position; the hair lines, however, are not to be remedied in this manner. The only way, indeed, of treating a negative afflicted in this manner is to rub into the fissures a little lamp-black by means of a dry finger, and the pigment, thus becoming deposited in the lines, fills them up altogether. It is very curious to find that, when examined with the aid of microscopes, these fine markings are also due to a rising of the film, and that by rubbing over with the finger the surface is pressed down, and thus helps to fill up the minute cracks existing; moreover, many of these fine markings will be found actually to disappear on warming the plate, only, however, to reappear on the film becoming cool again.

During the last year I have collected together a large series of plates showing signs of defects of this kind. I restored them with lamp-black as above described, half coating them afterwards with Grasshoff's turpentine varnish, trusting that this latter would prevent any further splitting of the film to take place. Such, however, was not the case, nor did a solution of gutta-percha or amber varnish prove to be a better safeguard. Nevertheless, I remarked, after the lapse of some months, that two of the plates which I had previously retouched with Indian ink upon the varnished surface did not show any further signs of deterioration in those places where the pigment had been applied, and although the fissures occurred very near to these spots, still they were cut off and prevented from forming anywhere upon this particular portion of the negative. Even those parts of a negative where the retouching pigment had subsequently been removed by means of a brush exhibited none of those defects, although such surfaces were perfectly free from all traces of the colouring matter.

I supposed at once that the gum contained in the Indian ink had some influence upon the plate, and made, therefore, a few experiments to ascertain whether this was indeed the fact. Two defective plates were, therefore, treated with lampblack, and then coated with a freshly prepared and filtered gum solution, one part of gum to forty parts of water, the liquid being applied to the negatives by means of a saturated brush. This solution acted very unfavourably upon the film, which became completely destroyed by the deposit of gum upon it; very different, however, was the effect of a solution of the same character applied by means of an almost dry brush, which, after dipping in the solution, was well pressed out upon a piece of cardboard.

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* *Photographische Mittheilungen.*

The negatives treated thus sparingly with gum were put away with other faulty negatives in a dry cupboard, and after preservation for six months were still found to have preserved their restored appearance and to be free from fissures, while in the other plates the splitting of the films had gone on uninterruptedly.

Judging from these results, there would appear no doubt that in gum we possess a valuable means for preventing the formation of these ugly defects in our negatives. I am, however, far from recommending that we should therefore cover all our good plates forthwith with a film of that material. On the contrary, I would say, preserve your negatives in the ordinary manner as hitherto, and only in the case of its becoming apparent that the plates have a tendency to display these defects resort to the remedy I have just pointed out. The lampblack or soot, which must be fine and free from grit, is rubbed carefully upon the plate in the first instance by no other aid than the dry fingers, and when the cracks have thus been effectively closed, the gum solution is applied, as I said before, with a brush as dry as possible.

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PHOTOGRAPHY IN AMERICA.

BY DR. H. VOGEL.

Philadelphia is the second largest city in the United States, the number of its inhabitants being 700,000, or about equal to the population of Berlin. It is a manufacturing town on an exceedingly grand scale, with an excellent harbour and numerous scientific institutions; but, in spite of all these, the impression upon the traveller is rather dull, after the magnificent New York and the smaller but lively and picturesque Boston. One almost fancies that, notwithstanding the many light-hearted Yankees and Germans who find a home there, the depressing influence is due to the fact of its still being the residence of many Quakers, by whom, indeed, the place was founded. The streets are monotonous; they cross each other at right angles, as in the majority of American cities, a system productive of but little variation; and there are, moreover, fewer parks and squares, or noble buildings, to be met with, to relieve the sameness of aspect. And even when large buildings do exist, they are generally lost to public view on account of the narrowness of the streets in which they are situated; in this way the Bank, the Masonic Hall, the Ledger building, and others, pass unnoticed. The streets appear less animated than those of New York, for Philadelphia is a more strictly manufacturing and commercial town; the people are occupied all day in their factories, and do not require to run about so much. Philadelphia is called by some the cleanest town in the Union, but actual experience of its streets tells a different tale.

Any drawbacks that the interior of the city may possess are, however, richly compensated for by the most magnificent suburbs, the lovely villas of Germantown, and the beautiful scenery of the Fair Mount Park and Valley of Wissahickon, very well reproduced in the stereoscopic pictures of Messrs. Cremer and Kilburn. Those who have, like the writer, seen the surrounding country under favourable aspects, by sundown, or moonlight, will for ever cherish a pleasurable reminiscence of the Quaker town, notwithstanding some of its gloomy shadows.

Philadelphia is happy in its reputation in the photographic world. It contains some fine galleries, by no means inferior to those of New York; and the name of Wenderoth, Gutekunst, Cremer, Fennemore, Schreiber, Trask, &c., are all well known for their good deeds. There are also to be found the Brothers Langenheim, nephews of Voigtlander, who occupy themselves in the production of lantern slides, apparatus of some considerable importance in America. There is the enlarging establishment of A. Moore, whose excellent work has already been well spoken of in this journal; there is the father of the Zentmeyer lens, the well-known optician Zentmeyer, whose microscopes are as much sought after as his photographic lenses; there exists a busy photographic company, with Mr. Cremer at its head; and there resides that thorough philosopher of the photographic art, M. Carey Lea. And this list of able photographers are all grouped round a journal, the *Philadelphia Photographer*, which, under the editorship of our friend, Mr. Edward Wilson, has raised itself during a period of six years to the position of leader of all American photographic journals, eclipsing all others by the number of its eminent contributors, by the brilliancy of its articles, and the intrinsic value of its contents.

Wilson is the Secretary and one of the founders of the National Photographic Association, and his services I cannot describe better than by quoting the words of Mr. Merz, the President of the New York Board of Works: "By the foundation of the Society, the hearty co-operation of the best and most worthy photographers of the country has been secured, and an honourable rivalry, as shown in the Boston Exhibition, has been established. We thank Mr. Wilson heartily. By his strenuous exertions we were freed from the annoyance of a bromine patent, and by his activity this exhibition was organised. He rendered possible what was deemed impossible, and scared away the misgivings under which we were labouring."

In these lines, from a perfectly impartial source, the services of Wilson in regard to American photography are justly acknowledged. Of like value were Wilson's efforts when disputing the patent of Shaw and Wilcox, who threatened to proceed against any photographer who saved his silver residues. The patentees were at one time so enraged by an article against the validity of the proceedings, that they endeavoured to prove the communication to be libellous, and thus to cause the editor's arrest. American photographers have honourably acknowledged Wilson's continued exertions on their behalf, and have presented him with a gold watch and a piano in testimony of their sympathy.

Mr. Edward Wilson is a partner in the firm of Benermann and Wilson, the printers of the *Philadelphia Photographer*, and of Wilson and Hood, dealers in photographic apparatus and requirements. It was at this establishment that I made practical acquaintance of the Wilson prize head-rest (fig. 1).

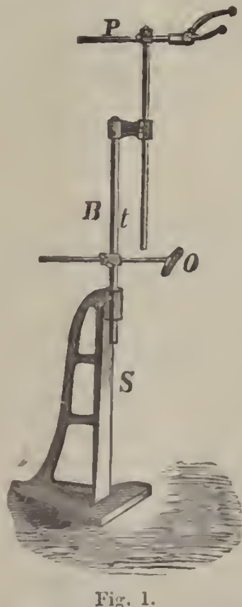

Fig. 1.

Everyone knows how ricketty many of our rests are on account of defective design and workmanship, and how many failures are ascribable to such defects. In the Wilson rest the solid rod does not run in a cylindrical opening, but in a board-clamp (fig. 2) closed by means of a screw. An easy and noiseless movement of the rod when the screw is loosened and great firmness when tightened, are the advantages of the rest, which the writer has several times had opportunity of testing practically.

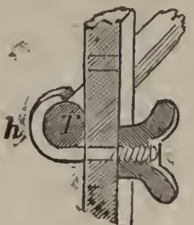

Fig. 2.

(*To be continued.*)

THE FORMATION OF THE LATENT IMAGE.

BY ELBERT ANDERSON.

[Mr. Anderson proceeds with his dialogue sketches in our Philadelphia contemporary, and endeavours to illustrate to his pupil the manner of production of the latent and the visible image.]

A. I draw with this piece of French chalk an image on this piece of polished plate-glass, and with this cloth efface all trace of it. There! it's gone. Now fancy to yourself (for the sake of illustration) that this piece of glass represents a sensitive plate that has just been exposed in the camera, and contains a latent image: as in case of the former, it is with this, we can discover nothing, even by means of the microscope.

M. No, sir; I see nothing.

A. Yet the image is as strong there now as when first I drew it.

M. Can you prove this?

A. Certainly; let us develop it. There, I breathe on it. See here.

M. That's very curious. I see it now, if anything, plainer than I did before. But as the breath dissappears, the image vanishes with it; have we no means of fixing (!) it?

A. A second application of your breath reproduces the image, and this may be repeated an indefinite number of times, even after the lapse of months. A piece of glass may appear perfectly clean, yet by breathing upon it, all trace of impurity on its surface will at once become apparent—will, in fact, be developed, for in developing a negative on a plate which is dirty, you develop the dirt at the same time as the picture.

M. Unfortunately, we do. I generally develop more dirt than eture. Thanks to you, however, I see the great importance of clean plates in future.

A. I have here a plate of polished silver, which I subject to the fumes of iodine and bromine in my dark-room. See, the vapours have combined with the silver and formed a thin layer of iodide and bromide of silver. I will now expose it in the camera. Now come in the dark room; here is the plate; this mysterious action of light has taken place, yet we see nothing; it is like our plate-glass with the chalk image. I will not breathe on it, but I have a friend here who will. Here is a little iron box containing some warm mercury. I hold the plate over it to catch the breath of the mercury. Watch it; see, the metallic vapour only settles upon the exposed parts, whilst the rest of the plate is unaffected. Now I put it in the hypo, which dissolves all but the picture. There; this is simply the Daguerreotype process. Now there was no nitrate of silver used in this case, Mr. Marshall.

M. That's so. In the experiment with the French chalk we had an opportunity of seeing the image before it was developed; thus we know for certain that it existed; but with a sensitive plate that has been exposed have we any means of knowing *a prori* of the existence of a latent image?

A. Undoubtedly

M. Can you prove this?

A. Very easily. I will prepare a plate. There; now I will expose it in the camera to an object that is intensely illuminated (that whitewashed fence yonder, that the sun shines on so brightly). I will expose this plate ten or twenty minutes Now let us go in the dark room. See here! there's your image already formed without the aid of any developer.

M. By the Lord Harry! Have you got any more such curious experiments to show me? They take the rag right clean on the bush,

A. O, yes; come see my patent process. I prepare another plate, and, before exposing it, I will pour over it the developer and immediately transfer it to the camera, so. It is now evident that, as the action of light affects the plate, the developer acts at the same time, and develops the picture as fast as it is produced; thus I make and develop my picture all in one operation. Come into the dark room. There; there's your picture all done; you have only to fix it.

M. From the effect observed of exposing a plate to a bright object unusually long, and getting indications of an image, and from the effect of light on chlorine, are we led to suppose that the action of light on the sensitive plate commences an action which is afterwards continued by the application of a developer?

A. This conclusion is not unnatural, but if assumed as a fact, how will you account for the following curious experiment? I expose this plate in the camera at an object brilliantly illuminated—that church steeple yonder—for three seconds. I now develop it. See, it comes up slowly. There is nothing in the shadows. Now, all the developing in the world will fail to bring out the detail. Thus, you see, one cannot make up for too little exposure by pushing the development. Now expose a second plate eight seconds. There, you see, is a decided improvement. Now expose twenty-five or thirty seconds. See, the time was much too long, and the reduction of silver has taken place over the whole image, and fogged all the shadows.

M. It is evident, here, that the longer the time, the more rapid the development, and the more intense the image.

A. You think so, do you? Now see here. I expose this plate to the same bright object for ten minutes.

M. Ten minutes?

A. Yes, minutes. Now watch the development.

M. Why, dear me, how singular! there is hardly any image. What there is is thin and pale, devoid of all strength. How is this?

A. This, then, teaches us that a certain time is requisite to form the image, which can neither be shortened nor prolonged beyond the proper time; and so far as the action of the developer being quickened and violent, it actually retards it. As regards the theories of the action of light in forming these images, I will state—First. During exposure of the plate one theory is, that the light reduces a small portion of the iodide to metallic silver, and that the action, having once commenced, accelerates the decomposition when the developer is applied, and attracts the reduced silver to those parts where the reduction has already commenced. Second. The reduced silver forming the image is produced instantaneously in the camera, but before we have time to apply the developer to continue the reduction, the free acid of the bath solution dissolves, and thus destroys the delicate image thus commenced; and the longer the development is delayed, the weaker the image will appear. Thus it is necessary to expose the plate sufficiently long to reduce more than the weak acid can destroy, so that enough remains to determine the after-reduction by the developer. Third. The formation of the invisible image by light is supposed to be a molecular change (unattended with any separation of elements, such as occur in the case of a visible image impressed by light), so modifying the elements as to cause them to hasten the decomposition of the mixtures. We have seen that the action of light upon chlorine exorcised a most remarkable effect. Why should not the iodide be similarly affected? Again, it is known that paper floated upon a bath of bichromate of potash, and exposed to the sun, darkens, and also that the action of light on gelatine combined with bichromate of potash renders the former totally insoluble in water; analogous to light rendering the iodide of silver insoluble in hypo.

M. You have shown that, even if the developer contain acid, it will, in a short time, decompose the silver solution. Suppose, then, the plate has not been exposed yet to light, and is flowed with the developer, the developer kept on until the decomposition commences, and there being no impressed image to attract the metallic silver, what becomes of it?

A. Ah, unhappy man! that's well asked. I will tell you what takes place in that case; namely, a universal deposit of silver over the whole plate, known—alas! too well known to many—as fogging.

M. But why, then, does this fogging take place, when there is an impressed image?

A. The image may not have been vigorous enough; and that being the case, it does not attract enough silver, consequently, pushing the development in the vain hope of bringing out the full image, the silver deposits on the shadows.

M. So, so! that's the cause of fogging, is it?

Correspondence.

PHOTOGRAPHS OF PRISONERS.

Sir,—Having read in your worthy paper of the considerable difficulty some of your former correspondents have had in photographing prisoners, I should like to give those of your readers who may be offered the job of representing the faces of gaol-birds a little encouragement to undertake such an enormous difficulty, as it has been represented.

You will, doubtless, be surprised to hear that it is the easiest, quickest, and one of the best paying jobs that a photographer can take in hand. The easiest, because you have no sitter to please, either in size, position, or expression; the quickest, because you have your sitters to hand, and need lose no time in waiting while they comb their hair or arrange their dress; and a good paying job, on account of turning out the work quick, taking them when it suits your convenience, any morning you can spare without interfering with your ordinary work—at least, so I find it. It pays well in another way: of any notorious criminal you can take an extra negative or two, make a copyright, and speculate on the love of the horrible in the public mind.

I can assure you, Mr. Editor, that, with three exceptions, I have had no difficulty in taking them as quick as possible. The rule is, that all are quite willing to have a portrait taken, they do exactly as they are told, and are so much under command that I have taken sixty negatives without having to take any one of them over again.

I could relate some very amusing scenes I have witnessed of their astonishment at the performance, and their remarks on it; but as I am only speaking of experiences, you might think them out of place.

Of course, you understand that all the work has to be done inside the walls of the prison. That is no great objection, as the conveniences are very many. The cells are very capital dark rooms, laid on with water, as water ought to be laid on in a dark room; gas to work with, and any light from any point of the compass to take the portraits in. You may be sure that I work with the north light, which, with a wall in front, a wall in rear, and a wall to my right or south, brings out as bright a negative as you would wish to see.

Very short exposures are required—from two seconds on a bright day to six on a very dull one. No head-rest is required; it would be in the way; I never use one in taking any of the prisoners.

I did not conceive it possible to take portraits of prisoners or anyone else so quick as I have done it. When I went at first, I expected to be able to turn out about five or six per hour, and, as I had forty to do, set myself out for a day's work, but managed, with my assistant, to knock off the lot in three hours and a-half, about eleven per hour; but as I continued, each time I took more per hour, and the last three or four visits have taken twenty per hour, and continued it for two and three hours at that rate. You will say, what sort of pictures are they at one in three minutes? I enclose some, taken at random from a parcel; you can judge for yourself. They pleased the Inspector-General of Prisons, and the worthy Governor says they are far superior to any he receives from other sources, so they cannot be very bad. Some of our visiting justices, too, are amateur photographers of no mean note: one, whose name was on the cheque for the payment of them, created a stir in the photographic world a few years back by some very excellent instantaneous work, was kind enough to express his approbation in no small terms.

The three exceptions I mentioned in the former part of my letter are the only difficulties I have had to contend with. Two were females, one a male. The first was a crazy Irishwoman, who, when I requested her to be seated, swore so horribly and loud that I was glad to tell the warder to take her away, and as she was more fool than rogue, it was not of much consequence, so she went on her way and I saw her no more. The other female I was cautioned about, and requested to get a particularly good portrait, as she was suspected of being a returned convict. She loudly protested her innocence, and vowed no ruthless photographer should depict her sweet countenance; in other words, swore at me for thinking she would be such a fool as to let me take her likeness for every bobby to stare at when "she hadn't done nothing." Three days in the dark cells on bread and water made her declare she would have her portrait taken as well as the rest on my next visit. I think she is now serving seven years through it. The last is now enjoying the solitude of the same dark cell for refusing to have his features exposed to the admiring gaze of other governors of gaols, who are supposed to have superintended his daily comforts at certain periods of his existence. I have no doubt he will be equally willing to sit on my next visit as the lady was. Should it not be so, I shall be pleased, if you are willing, to let you know by what means I take a portrait of him, for take one I will, by hook or by crook.—Yours truly, Harry.

[The examples enclosed are excellent, and very interesting. We shall be glad to learn the result of the further trial of the case named.—Ed.]

PIRACY AND COPYRIGHT.

Sir,—Seeing several letters under the above heading, signed "J. Cunnington" (who made certain remarks relative to the "Stag at Bay" and "The Black Brunswicker"), I may mention that some time since a person called at my warehouse and purchased several prints, and gave the name of Cunnington. He repeatedly asked me if I could procure him some proofs without the "line," of Messrs. Brooks's, Graves's, Gambart's, and other well-known publishers, for which he offered me high prices, providing they could be procured without the publication line. Such proofs, doubtless, were intended to be produced in Court to shake the validity of the copyrights; but I gave him to understand, however great the profit, I scorned such a transaction, and his presence was anything but agreeable.

The production of a proof without the "line" is no evidence that these proofs were issued by the publisher, or with his knowledge. These proofs are generally working proofs taken by the engraver during the progress of the plate. Vice-Chancellor Kindersley decided this in the case of Lloyd *v.* Ashford, January, 1865—that the onus of proof fell upon the defendant to prove that such illegal proofs were sold or issued by the publisher.

"It was clear that the 8th George II. was an imperative statute, and must be complied with. It was also clear that, somehow, copies of these pictures had got into circulation, which copies did not comply with the statute. If it was an accident by means of some workman, or in some other way, he must succeed; and, therefore, the plaintiff was clearly entitled to a copyright. The injunction, therefore, must be made perpetual, and the defendant must pay the costs."—I am, yours respectfully, Louis Brall.

6, *Great Prescott Street.*

PIRACY AND COPYRIGHT.

Sir,—When Mr. Brooks wrote the letter which appears in your last issue he was in error. What little talent I may possess has never yet been used in advocating the cause of "copyists" (which word I take to be a delicate euphuism for "pirates"); I have merely challenged the legality of certain convictions. I am sorry to hear that the person who had charge of the parcel containing the photographs upon which Mr. Knight was convicted has unfortunately lost it. It was probably in the custody of Cope, and he, being "a young man from the country," may have been waited on by some of "the artful dodgers" who infest the locality of Worship Street. In consequence of this loss Mr. Brooks, to his great regret, is unable to accept my challenge to have the photographs compared with the pieces cut therefrom in my possession What shall I do with the pieces in my possession? Shall I burn them? Perhaps I had better keep them; they may be useful on a future occasion, as, according to Mr. Brooks's theory of the "common practice" of cutting off the stamp, there are 3,996 piracies which these pieces will fit, and which may some day turn up.

With reference to "A Charming Incident," Mr. Brooks says a "steel plate is one thing, a copyright another," which is perfectly true, though publishers have usually considered a plate to be both. Under the circumstances, Mr. Brooks is in error in supposing he has any copyright in the steel plate of "A Charming Incident." Even if the publisher, Mr. Plimpton, had assigned the copyright thereof to him under seal, the copyright would have expired upon the plate changing its nationality. With America we have no copyright relations, and all engravings published there may be copied in this country, and *vice versâ*; and even if international copyright law with America did exist, the copyright would not be assignable; it could not be brought within the provisions of the Act. As the sleepers were made to fit the bed of Procrustes, so copyrights must be made to fit the Act, which, in this instance, could not be done. Although copyright exists independently of the plate, possession thereof is of no value when the plate belongs to another person, because the owner of the plate can at any time destroy the copyright by issuing unlettered impressions, or by altering the date of publication. There is also another circumstance which would militate against the copyright in "A Charming Incident." Since publication, material alterations have been made in the plate, which have, to some extent, altered its character; early impressions and later impressions have not the same identity of subject.

I find an assignment of the picture of "The Black Brunswicker" has been registered at Stationers' Hall. It appears by the entry to have been made in 1867, and registered in 1870, three years afterwards. The assignors are T. McLean, M. Agnew, L. Pocock, and R. Lloyd. They are described as the four liquidators of Moore and McQueen (limited). This, I think, is erroneous. These four gentlemen were, I believe, appointed trustees for the purpose of carrying on the business for the benefit of creditors. After a time they ceased to be trustees, and the company went into voluntary liquidation, when a liquidator was appointed for the purpose of winding up; and a few days since the Court of Chancery made an order for a compulsory winding up. If the four trustees are wrongly described upon the register as liquidators, that will be a fatal objection to the copyright. There is another objection: the first entry on the register states that Mr. Millais assigned his copyright to Mr. Graves and Messrs. Moore and McQueen. There is no entry of any assignment by Mr. Graves, nor does his name appear as a party to the last assignment. The name of the present proprietor is also wrongly entered upon the register, an error sufficient by itself to vitiate the copyright.

There is a statement in a previous letter of Mr. Brooks which I omitted to notice in my last. He states that when I was in the witness box at Worship Street I so "fenced" with the questions put to me as to cause the magistrate to make certain remarks. I must distinctly deny this: my examination occupied about five minutes, and my answers to questions were clear and precise. Had the magistrate made any unjust remarks to me, I should have given him an answer.—I am, sir, your obedient servant, J. Cunnington.

London, December 6th, 1870.

TUNICARE FOR DRY PLATES.

My Dear Sir,—A correspondent in last week's News asks if "Tunicare" may be successfully employed as a substratum for "dry" collodion. As I have used it for that purpose all the past summer, I can with confidence recommend it. I may also state, that in my hands it has always acted well for "wet" collodion, and answers fully all claims made for it by the maker. But this preparation decomposes rapidly after being diluted with distilled water. I, therefore, prefer mixing sufficient to coat twelve plates at a time, mixing a new lot for every succeeding dozen.

The "coffee" process appears not to have been very largely represented at the Exhibition in Conduit Street. I am sorry for it, as I believe it to be the most simple and one of the most certain of "dry" processes. This post carries a specimen from a "coffee" negative for your inspection. I shall be glad to know your opinion of the same.—Yours very faithfully,

Monmouth, Dec. 5th, 1870. R. Tudor Williams.

[The print enclosed is one of the most charming landscape photographs we have ever seen. Exceedingly delicate and atmospheric, it is still perfectly brilliant.—Ed.]

TUNICARE FOR NOTHING.

Dear Sir,—In this week's News I see a letter signed "A Sufferer," complaining that he cannot use tunicare; also a letter from a correspondent stating that he has kept plates four months after coating, and still they give good, clean, adhesive films.

After such contradictory statements it is useless for me to say anything, as anything I say in favour of tunicare would of course be taken as puff. As a proof that I do not wish to do so, I make this proposition:—To anyone wishing to give my tunicare a trial, I will send, to any address (they paying carriage), a 1s. 6d. bottle, on these conditions; namely, if the tunicare answers, and the parties are satisfied with it, they pay me the 1s. 6d. for it; if they do not find it answer, they are not to pay for it.

Please let this appear in your next.—I am, dear sir, your's truly, G. Jones.

December 6th, 1870.

LITHARGE AND GLYCERINE AS A CEMENT.

Dear Sir,—In a late number of the Photographic News, in a corner which you devote to very useful cuttings of practical science, and from which I have at times picked up valuable scraps of information, you quote, I think from the *Mechanic's Magazine*, that these two substances combine, in certain proportions, to form a valuable cement, which sets firmly, even under water, is unacted upon by acids, and promises to be of great utility to the photographer.

I lost no time in testing the properties of this combination, but the result has been utter failure. The glycerine and litharge dough will not set, nor has it, as I should *prima facie* have supposed, any desiccating or adhesive properties whatever. And even after standing by for weeks, it is acted upon by water just the same as simple clay.

I certainly used Price's patent glycerine, whereas the common glycerine is mentioned in the article referred to, but I cannot suppose that the difference between these two forms of the same substance would affect the properties of the combination to any great extent.

Can you, or any of your readers, enlighten me on the subject? A really good cement, easily made and applied, is still a desideratum in the laboratory, especially if it possess the properties described in your quotation.

I can fancy that litharge well incorporated with common linseed oil boiled with driers might answer well as a cement, as white lead thus mixed is well known to do, but I confess, with my present knowledge, I have no faith in glycerine. No one, however, will be more pleased to find that his suppositions are incorrect than—Your obedient servant, W. L.

December 1st, 1870.

[We have had no experience with the compound ourselves, but quoted what appeared to be an interesting statement from a usually well-informed journal. Have any of our readers any experience in the matter?—Ed.]

ALBUMEN FOR PRELIMINARY COATINGS.

Dear Sir,—I must say a word in favour of albuminizing the plate, having received great benefit from the articles on the subject which from time to time have appeared in the News.

I have now been using the same negative bath for six months, only replenishing as it diminishes in quantity, and two months of that time using albuminized plates, without perceiving the slightest injury to the bath.

I take the white of one egg with some broken glass, and put in an empty collodion bottle, and well shake it; then add a little methylated spirit (one ounce) and five or six ounces of water; then filter, and use at once, or a month hence, for I find no difference in result.

I have tried Mr. Fry's method, but do not find it near so handy as one recommended by one of your correspondents; namely, run the albumen over the wet plate, and mark the other side with a little water colour, which I rub off just before coating the plate with collodion.

Now I have used one egg for weeks, and though the solution must have become very dilute from contact with the water on the plates, have never found any difference in result; namely, negative free from any kind of deposit on the shadows. I have not intensified for months, and I find no trouble in getting dense negatives now in November.

Sometimes I use a tincture of iodine after varnishing, if my customer wishes for a very white face, but I am not in favour of a face like marble; I like to see gradation and colour in it.

I went, some months ago, to buy a bottle of tunicare, but the small bottle for three and sixpence frightened me, and now, I am happy to say, I can make a substitute myself for one penny, and without the disadvantage, for my plates are easily cleaned.

I am now using a quantity of old plates which I put out in my garden, where they have been exposed all the summer. They are now, with albumen, giving me negatives free from fog or stain. My plan is, to soak old plates in a pan with half a pound or pound of washing soda, and let them lay for a week or month till I require them; then rinse well in water, and albuminize.—Yours (one who has much to be grateful for to the Photographic News), F. T. Mills.

Lisson Grove.

PHOTOGRAPHY IN COLOURS.

Sir,—We hear said every day, "Oh! taking photographs in colours will never be found out." But I am of a different opinion to them, and I believe that, before long, the photographer's *rara avis* will be found; and if it is, we all know that it will cause a revolution in every branch of photography—from the operator to the salesman; and I hope to see the day when we can give a finished photograph in exchange for the chalky ones of the present time. Now, as a photographer, I have thought of many ways to do this. One way was this: I have often plucked a flower—a pansie, for instance—and admired its beautiful colours, and then it has struck me that it got its beauty from the sun, and if that could give lasting colours to a flower, why could we not find out the property in that flower, and apply it to the taking of portraits and landscapes? I think it would well repay a photographic chemist to study, and if he should be successful, why I, for one, would say that he had done more for photography than any one man before him. Another thought, and I am done. Take a Rosella parrot when it is young, and cover its body so that the light cannot get to it, and, when it is four months old, take the covering off, and you will find its feathers white, or nearly so. Now let it stop in the sun for a day or two, and by the end of that time the white feathers will have changed to all the colours of the rainbow, for which the Rosella parrot is celebrated. Now, we all know that there must be some peculiar quality in those white feathers for the sun to act upon, and if so, why not find out that property and tell us? The things that I have written above may have been thought of by many of my fellow-photographers, but as I have never seen them in print, I give them for what they are worth, and waiting for the turn of the tide, I remain, &c., F. H. Dufty, Junior.

Melbourne, Victoria.

Proceedings of Societies.

Liverpool Amateur Photographic Association.

The last meeting of this Association during the present year was held on Tuesday evening, the 29th ult., at the Free Public Library, William Brown Street, the President, Mr. John Henderson, in the chair.

The minutes of the previous meeting were read and confirmed.

A letter of farewell from the retiring Secretary, Mr. Joseph Guyton, was read, in which, after alluding to the reasons which compelled him to leave Liverpool, he congratulated the Association upon its healthy state and upon the elements of prosperity and usefulness contained within it, concluding with expressions of regret at leaving the Association, trusting, at the same time, that the many friendships he had formed would be lasting.

On the motion of the Rev. T. B. Banner, seconded by Mr. O. R. Green, a eulogistic vote of thanks to the late Secretary was carried by acclamation.

The election of officers for the year 1871 was then proceeded with, and the following gentlemen were elected:—*President*: Mr. Thomas Higgin.—*Vice-President*: Messrs. E. Phipps and A. Cooke.—*Secretary*: Mr. William Murray.—*Treasurer*: Mr. J. Henderson. The following gentlemen retire from the Council:—The Rev. T. B. Banner, Messrs. W. H. Wilson, H. A. Wharmby, J. A. Forrest, and W. Atkins, and are superseded by Messrs. R. Cooke, P. Mawdsley, L. Hughes, E. Roberts, and Joseph Dod.

Mr. Higgin exhibited a reproduction, by a Staffordshire amateur, of a woodcut, in printers' ink, by means of photography. A matrix was formed of gelatine sufficiently indurated to impress a plate of zinc so that prints such as that exhibited could be struck off.

A discussion arose upon this process as to the extent to which it resembled the Woodburytype process, some of the members contending that it differed from it in so far as it reproduced black lines only, and failed to render half-tones, and was therefore only suitable for copying lined or dotted drawings.

Mr. Higgin also exhibited an enlargement taken at South Kensington, from one of his own negatives, of a larva of a beetle. Notwithstanding the large size of the print the definition was very perfect, and it was well adapted for educational purposes. It was apparently taken on a surface of prepared cloth or canvas.

The Rev. T. B. Banner exhibited an interesting series of architectural views, which he had taken during the past summer in Paris, Laon, Soissons, &c.

The President produced the First Volume of the *Government Archæological Survey of India*, profusely illustrated by carbon prints; and Mr. Forrest sent for exhibition two "combination" printing frames for 8½ by 6½ plates.

At the close of the meeting the presentation prints for the year were distributed, and the members were requested to bring their work for competition to the next meeting, when Messrs. Rboinson and Cherrill's prize will also be awarded.

Talk in the Studio.

The Eclipse.—The various eclipse expeditions started a few days ago. Four distinct parties represent English science. Two visit Spain—Cadiz and Gibraltar being the points of observation; another party proceeds to Oran, in Algeria; and a fourth visits Sicily. Only two of the parties will make photographic observations. At Gibraltar Mr. Buckingham and Mr. Beasley will undertake the photography, and at Sicily Mr. Brothers and Dr. Vogel will take charge of the department. The Sicilian party proceeded overland, and Dr. Vogel will join them in Munich.

New Photographic Journal.—Our esteemed contemporary, the *Philadelphia Photographer*, finds it desirable to extend the facilities of its readers for becoming acquainted with the progress of photography, and, accordingly, will issue a supplement on the fifteenth of each month. To meet the wishes of any who may desire to receive the *Photographer* monthly, only, as usual, this supplement will have the character of a distinct journal, and will be called the *Photographic World*, and will, in all respects, be uniform with the *Philadelphia Photographer*. We wish it every success.

Cleaning Oil-painted Surfaces.—Take a piece of soft flannel, put it in warm water, and squeeze it till it feels dry; next dip it gently on to some very finely pulverized French chalk, and rub the painted surface with the flannel; the effect will be the removal of all dust, greasy matter, and dirt. The surface is next washed with a clean sponge and water, and dried with a piece of soft wash-leather. This method does not injure the paint like soap, and produces a very good result.—*Chemical News.*

A Solar Printing-Frame.—The Editor of the *Philadelphia Photographer* says:—"We have received from Mr. L. Moulton, Muskegon, Michigan, one of his solar printing-frames, which is a combined silvering apparatus, stretcher, and toning dish. It is merely a double frame-work, the connecting edges of which are corrugated or notched to fit each other tightly. The frame is opened, the paper laid on, frame closed, and thus a dish is formed. The sides being shellaced, the sheet may be silvered, developed, or toned, as it is stretched on the frame, and is equally handy for canvas or paper. Where parties do not do much large work, this contrivance saves the expense of large dishes. Solar prints may be made on the paper while stretched in the frame, and developed without handling."

How to Save Your Glass Dippers.—Take a piece of gutta-percha, soak it in a basin of hot water till soft. Make it into the shape of the bottom of your bath. The bath being empty, put in the gutta-percha, and, with a piece of stick, pound it till it fills up the bottom; when cool it will stay there, and save your dipper.—*American Bulletin.*

To Correspondents.

G. W. Knight sends us a letter re-asserting statements which were contradicted by Mr. Brooks's last letter in our pages. We cannot in any case continue to devote space to mere assertion or counter-assertion; but when we find some of Mr. Knight's assertions are made in direct opposition to the plainest evidence, we are compelled to assume his statements generally may be equally inexact. Referring to Mr. Brooks's letter in which he states that the copyright of "A Charming Incident" still belongs to him, although the steel plate had been sold to an American, Mr. Knight says, in the letter before us, "I never said anything about copyright of 'Charming Incident' belonging to a Yankee; it was the plate." Now, on turning to Mr. Knight's letter in our issue of the 25th ult., we find him distinctly asserting that "Mr. Brooks never had any copyright in 'A Charming Incident,' which belongs to an American in New York." Here it is the copyright only, and not the plate at all, which he mentions; and yet, within a fortnight, he is incautious enough to deny that he had ever referred to copyright. If his memory be equally imperfect, and his habit equally careless, in other statements, he can only blame himself if they are received with hesitation when in opposition to the testimony of respectable witnesses.

Accident.—The addition of acetate of soda to your printing bath would cause the formation of acetate of silver, which in small proportion would be dissolved in the bath: if a large quantity were formed it would become precipitated, and may be removed by filtration. Acetate of silver in small proportion will not be injurious to the printing bath, so you may use it without fear. It is very difficult to remove from a bath; if you wish to try, first add nitric acid to the bath (this will decompose the acetate of silver, and liberate free acetic acid); now evaporate to dryness, and apply heat until all smell of acetic acid is removed; then redissolve the nitrate, and make it to the proper quantity of solution.

John Sorby.—In all cases it is wise to have a protecting hood in front of your lens for portraiture, to protect it as much as possible from all light not reflected from the model; but this is not more necessary in using the lighting arrangement of M. Adam-Salomon than any other mode of lighting. You will not need, we apprehend, to alter your studio in order to use the method described.

A Sufferer.—We regret that we can suggest no certain means of preventing the cracking of negative films. Whilst we have no doubt that change of temperature and damp are the chief agents in causing these cracks, yet they will only produce them when predisposing causes are there, and the predisposing causes are difficult to determine. Are you sure the water with which you wash your negatives after fixing is pure? If not, give a final swill with distilled water. One of the safest things you can do is, as we before said, to change your varnish. You state that two or three negatives have been varnished with good varnish from different makers, but still have cracked. But it is quite possible that although the varnishes are obtained from different houses, they may be of one character. Try an entirely different varnish; if, for instance, you have used a spirit varnish, try one in which benzole or chloroform is the solvent; by this means you quite change the conditions, and may so arrest the evil. See article on the subject, by Dr. Vogel, in the present number.

Bath.—Your description of the process you wish to find is, unfortunately, too indefinite to enable us to help you. We do not remember a process in which a second bath containing gelatine is used. There are several methods of keeping plates sensitive for an hour or two. The honey process answers well; where the plate is not to be kept very long, the use of a fully bromized collodion, short immersion in the nitrate bath, and placing wet blotting-paper behind the plate, answers very well.

W. R. P.—We should think that M. Adam-Salomon's background and lighting system would be quite applicable to such a studio as you describe. The background might be seven or eight feet across, instead of ten feet, as in that described.

J. A. Mills.—The letter was duly forwarded. Thanks; we shall have pleasure in receiving the hints.

R. Tudor Williams.—The coffee process was not well represented in the exhibition. Indeed, there were not many dry-plate pictures. Mr. Penny's were the only prints from coffee plates we remember. We cannot give you information about securing the exchange you name. The only plan is to try. Your print is very fine indeed. Thanks in advance for the others. We prefer them mounted, as we keep them in a portfolio.

An Amateur.—Thanks.

Christmas.—We have not seen or heard of anything of the kind.

Mahl-Stick.—We know the tendency of retouches in water-colour, or even with pencil, to become more opaque from the reduction of silver thereon when in contact with sensitive paper. It is impossible to have the paper so dry that this result will not occur. The safest plan is, to apply a second coating of varnish; but it should have a different solvent to the varnish upon which the retouching is effected, or the position of each touch may be moved by the softening or flowing of the first applied varnish. If you do not wish to varnish, the only plan is to interpose a transparent film, like a sheet of Marion's leather collodion, or caoutchouc pellicle, as it was styled. Some such film as this might be used without disadvantage.

Ignoramus.—The size of mount for a picture of any given size is much a matter of taste, somewhat depending on the use to which the picture is to be put, and somewhat on the style of picture. For a 5 by 4 landscape a card about 8½ by 7 would be a good size. 2. You will find a series of articles on printing on ivory in our last volume. The wet collodion process is by no means the best for printing on ivory, and contact printing with wet collodion is always troublesome; but if you wish to try it you have simply to coat with wet collodion, excite, expose, and develop. 3. Warm tones in transparencies may be obtained by developing with pyrogallic acid, with acetic acid added; or by toning with Sello's salt.

Slinx (Ceylon).—So far as we can judge, the plan you mention will answer well. The size depends much upon individual requirements. About twenty-six feet by twelve feet will give good proportions. If you adopt M. Adam-Salomon's system of lighting described in our last, it will make you comparatively independent of the position of your room. 2. The Autotype process is carbon printing by sunlight, a sensitive tissue of gelatine and pigment being exposed under a negative; in the Woodbury process the print is produced by mechanical printing, with an ink composed of gelatine and pigment. In point of permanency, they are similar. The mode of production is different.

H. M. M.—Each spot appears to have a small nucleus, due to some defect in the paper, and we should, therefore, be inclined to attribute the spots to some fault in the paper. To test this, examine the paper at various stages, before sensitizing, after sensitizing, after printing, and after fixing, and let us know at what stage the spots appear. We shall then be in a better position to assist you.

C. C. F.—Common sheet glass answers best. Have the panes as wide as convenience will permit. 2. We have had no personal experience with the lenses in question. 3. Our experience has only been of an experimental character, so that we cannot throw much light on the point of practice you name.

R. Franks.—We regret that we have no source of reference from which we can supply you with the names and addresses of New York and Boston photographers. We may easily remember a few names like those of Kurtz, Brady, Gurney, Fredericks, and Bogardus, of New York; Black, of Boston; and Loomis, of the same city; but we have not their addresses.

R. M. D. (Eastbourne).—A small furnace and muffle may be obtained for burning-in enamels. For experimental work, such a contrivance as that you mention may serve; but for any practical work, a furnace and muffle are necessary. These can be got on a small cheap scale. Gas may be used, but is costly. A crucible would not answer well; it is an important point to have the greatest heat above the enamel. We regret that we have not time to write private answers to photographic questions.

R. R. Taylor.—It is quite impossible to state how much liver of sulphur will be required to precipitate the silver from a given quantity of solution unless you can also state the proportion of silver present. There may be one grain, or there may be twenty in an ounce of the solution. The only mode of ascertaining is a very simple one; it consists in testing the solution as we have often stated. Take an ounce of the solution, and add the liver of sulphur a grain at a time, allowing time for the turbidity to subside each time, until all the silver is precipitated, and from the number of grains required estimate the amount required for the whole of the solution. The cyanide solution may be added to the hypo solution.

Pekin.—The chief faults of the pictures consist in under-exposure in the negatives, and a little want of sharpness in the gentleman's portrait.

A Four Years' Subscriber.—The *Philadelphia Photographer* may be obtained of Trubner, Paternoster Row, or it may be obtained direct, by post, from the office in Philadelphia. The address, "Sherman's Buildings, corner of Seventh and Cherry Streets, Philadelphia." The price of each number is half a dollar (2s. 1d.); what the price by post to an annual subscriber is we are not quite sure; probably about £1 5s.

W. Fox.—Received. Thanks. When photographic weather returns we shall make trial and report.

Harry.—Many thanks; 9894 is the one regarding which we made enquiry.

G. B. Ayres.—We have forwarded the letter.

G. Croughton.—Received. Thanks.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 641.—*December* 16, 1870.

ATENT OFF
RARY

CONTENTS.

PAGE

Yellow Spots on Prints—Dirty Whites 589
The Exhibition of Photographs 590
Obituary—The Rev. J. B. Reade 591
The Emigration of Photographers to America 591
The Uranium Intensifier for Negatives and Diapositives 592
Clamping the Head-rest. By J. Anthony, M.D. 592
On the Production of the Bromides of Potassium and Sodium 592
Backing for Dry Plates. By M. Carey Lea 593
Edwards's New Combination Printing-frame. By J. T. Taylor 593
Some Remarks on General Applications of Photography, with an Account of a Method of Making a Combined Negative. By William Cobb 594

PAGE

The Bulb Syringe Applied to Photography. By John C. Browne 595
Moonlight Pictures 595
Correspondence. — Piracy and Copyright — Glycerine and Litharge Cement—Albums for Photographs—Packing at the Exhibition—Glass Dippers 595
Proceedings of Societies.—Amateur Photographic Association — South London Photographic Society — Photographic Society of London ....
Talk in the Studio 598
To Correspondents 600

YELLOW SPOTS ON PRINTS—DIRTY WHITES.

There are very few of the evils the photographer is heir to which are not traceable to some definite cause; and in most instances the cause is amenable to treatment and removal. But now and then troubles come which seem to baffle all attempts to trace their origin. Of these troubles none are more irritating than the minute yellow spots which occasionally appear on prints, varying in size from a geometrical point to a pin's head or even larger. They will sometimes appear sown broadcast over the prints of one day, none having been seen on the previous day; but it may be that they will continue for many succeeding days, despite of every supposed precaution.

The first conclusion at which the printer arrives, when he perceives a crop of such spots on his prints, is that the paper is defective. For it is a custom, which age has almost made respectable, for a manipulator in any art first to blame his materials for any form of failure. But it may be that fresh batch after batch is tried with like results. It is possible at times that paper may be in fault, and then the difficulty is easily traceable. It may be desirable here to indicate one or two general rules, whereby the printer may decide certainly whether the fault is or is not in the paper.

When the fault is in the paper, the spot will generally be found to possess a small centre or nucleus, in which the colour of the spot is more intense.

When the fault is in the paper, the stain will generally be seen to be present with more or less intensity at both sides of the paper.

When the fault is in the paper, it is generally visible after the paper has been sensitized, and before toning and fixing.

One or all these conditions are generally present when the cause of the spots is in the paper, and although the rule is not invariable, yet it may be generally relied upon if all the conditions, or the two former, are present. Spots of a similar character may, however, proceed from other, and, at first sight, more occult causes; and these may, in many cases, be traced home to their sources. One of the least suspected causes was recently referred to by Mr. H. T. Anthony, in a paragraph which we reproduced. The cause, as stated by Mr. Anthony, is the presence of minute fragments or particles of hyposulphite of soda floating as dust in the air of the printing-room. A great many persons, it is correctly observed, wash, tone, and fix their prints in the same apartment. It is almost impossible to prevent the hypo from being spilled in greater or less degree on the floor. It there dries, is ground by the feet into a fine powder, which is readily raised by currents of air, and distributed upon and into every vessel exposed: upon the surface of negatives, upon the pads of printing-frames, upon the sensitive paper itself. Here, then, is a most fertile cause of these spots. A minute particle of hyposulphite of soda coming into contact with the silvered surface, or even the back, of the sensitive paper, inevitably causes a yellow spot on the place, which nothing will remove. Such spots will, however, be visible before the print is toned and fixed; and if the contact occurred after fixation, although it might eventually issue in a spot, the change would not be apparent immediately.

Such dust of hyposulphite floating in the air, and coming into contact with the toning solution, would cause decomposition and loss of toning power; coming into contact with the silver bath, it would cause discolouration; coming into contact with the washing waters, it would cause yellowness in the prints. Other particles, such as those of sulphate of iron, chloride of lime, &c., would cause many troubles, but not so disastrous as those produced by the dust of the hyposulphite of soda. It will be seen, then, how important it is to avoid spilling crystals or solutions on the floor of the printing room, and how imperative it is to cleanse the floor repeatedly, not with a broom, or any means which will cause the dust to be spread about, but by means of damp cloths.

Another cause of these small yellow spots, which, although we have before pointed it out, is not sufficiently well known, arises only during the process of fixation, and, as the spots will not be seen before that process has taken place, the cause may be easily traced. In this case the spots are due to minute points of imperfect fixation, the result of minute air-bubbles formed on the surface of the print at the moment of its immersion in the hypo-bath. Hard, horny papers are most prone to the formation of these bubbles; but they will occur at times with all samples of paper. They are often so minute that they escape observation unless their presence is looked for with care, and they are sometimes so tenacious that they resist all the ordinary moving about the prints receive in the fixing bath. The result of their presence is, that at the point where they rest the hyposulphite comes into such imperfect contact with the fluid and the silver salts it contains that, instead of the formation of the soluble double hyposulphite of silver being formed, upon which perfect fixation depends, the insoluble single salt is formed, which no future treatment will dissolve and remove from the print. This insoluble single hyposulphite of silver is very quickly decomposed by light and moisture, and it generally happens that it is decomposed during the washing of the prints, and the yellow, or yellowish-brown, or yellowish-green spots due to its presence are for the first time seen generally when the print is completed: sometimes not becoming apparent, indeed, until the print is mounted. The cause in this case being known, the cure is not difficult to apply. It is only necessary to examine the face of each print carefully, immediately after immersing in the fixing bath, to ascertain that no air-bubbles are present, and to remove them at once if any are found.

There are some other causes of spots in prints, into which we do not enter here. One especial cause of metallic spots Mr. Bovey treats in our forthcoming Year-Book. To this cause we shall probably refer shortly.

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THE EXHIBITION OF PHOTOGRAPHS.

Results of Various Processes.

The exhibition which has just closed was not rich in novelties; but most of the specialities which were contributed were well worthy of notice.

The prints from reproduced negatives exhibited by Mr. J. W. Pickering, of Birmingham, excited much interest by their excellence. In some cases prints from the original negative and the reproduced negative were exhibited side by side, and which was which of these required a very keen eye to detect, whilst enlargements from the same negatives appeared to possess more detail than the originals. Of a similar character were three prints exhibited by Mr. W. Jeffrey. The subject was a garden party at the house of Mr. Albert Smith in 1857. Apart from its photographic interest, the picture calls up mournful memories of great men gone from amongst us since it was taken. Here are Charles Dickens, Clarkson Stanfield, Albert Smith, Mark Lemon, Augustus Egg, and others in this group of twenty-four persons now dead. The print from the original negative is about 2½ by 2 inches, and, having been taken instantaneously under difficulties, is hard, black and white, with little detail. There are two sizes of enlargement, one about quarter-plate, and the other half-plate, and each really better than the original, possessing more detail, and losing nothing of definition. Readers interested in this branch of the art will find valuable details in our forthcoming Year-Book.

Analogous in its character, and possessing a very high degree of interest, was Mr. Hughes's enlargement of Mr. Rejlander's group of the Solar Club. The skill of the grouping and the excellence of the definition are marvellous, when the difficulties are remembered of dealing with a score of gentlemen seated round an oblong dining table in convivial enjoyment. Mr. Hughes's enlargement is a collodion transfer on a whole sheet of paper, the original negative having been half-plate. In this enlargement not only is the definition perfectly satisfactory, but the detail is perfect, and there is no coarseness or baldness, notwithstanding the extent of the amplification. The tone is excellent, and altogether the result is a marvellous production, speaking volumes for the excellence of the method, as well as the skill with which it has been applied.

Mr. Woodbury's extensive contribution of examples of his photo-relief process furnished abundant evidence of the high perfection to which he has brought this mode of printing, and of its fitness for every class of work. Subjects from nature, reproductions, objects of art, all were exhibited, all possessing force, delicacy, and definition of a quality which rendered it impossible to distinguish them from fine albuminized prints. The transparencies on glass were perfect, and the water-mark transparencies on paper, which are exceedingly beautiful, excited much interest.

Carbon printing was not largely represented; but the specimens sent were very fine. Mr. Spencer sent a variety of prints to illustrate various tints of tissue. Messrs. Downey sent a very capital carbon portrait of Herr Wilhelmj. Messrs. Sarony's large reproduction, printed in carbon, of the Committee of the Cotton Famine Relief Fund, was a noble work. The original was produced by combination printing by Mr. McLachlan, and finished in oil. The reproduction, the negative of which is four feet long, was produced by Mr. Sarony, and it is a fact worth stating that this large negative had been taken and a fine carbon print produced from it within three hours of receiving the painting in their studio. As a reproduction it is perfect, and the tone of the carbon printing unusually fine.

Herr Albert was represented by one print only, a large and fine one; but the large and excellent collection of heliotypes sent by Edwards and Kidd very amply illustrated the possibilities of this mode of printing, as suited alike to reproductions and subjects from nature. Their large collection of reproductions of the works of Albert Durer and Van Leyden were very fine.

The contribution of reproductions printed in silver was not large, but included some very capital work. Mr. Belton's plain paper copies of engravings after Titian were exceedingly perfect, lacking no desirable art quality. Mr. F. Hollyer's reproductions from paintings were, as usual, exceedingly perfect, exhibiting a keen appreciation of the points to be preserved in the original. Mr. H. Dixon also exhibited some very excellent reproductions.

The exhibition contained some fine examples of enamel photography. A frame of specimens by M. Lafon de Camarsac is exhibited by M. Bondonneau. These, as the photographic world generally knows, are fine, M. Lafon having for years borne the palm in this branch of the art; for some time past this palm has been disputed with fair prospect of success by Mr. Henderson, and now we feel that we do the great French artist no injustice in stating that in this exhibition Mr. Henderson must take the laurels. As pure specimens of photo-ceramic portraiture his work equals any we have seen, and far surpasses the majority of attempts in this direction; excellent in colour, in force, in detail, in delicacy, they seem to leave nothing to be desired. Mr. Ford Smith, we see from the catalogue, exhibited some enamels, which, unfortunately escaped our observation, which we regret, as from the excellence of some other of his work we should have preferred to examine these. Mr. Solomon exhibited a collection of enamels which contained some good examples; but, having been hastily selected for the exhibition, they failed to do him full justice, as we have seen better at various times produced in his establishment.

Mr. A. Johnston, of Wick, sent a number of clever examples of photographic *genre*, produced by combination negatives and combination printing. Unfortunately, not being framed, it was difficult to get an opportunity of examining them satisfactorily. The same may be said of some good studies of fishermen sent by Mr. J. Waller, and of some other pictures by different contributors. The records of artillery experiments sent by the photographic establishment at Woolwich, and the specimens sent by the Royal Engineers at Chatham, speak highly of the skill with which the art is practised at these military establishments. The opal print of a torpedo explosion sent by the Engineers was exceedingly clever and interesting.

Amongst the transparencies, the wonderful effects of sun, moon, stars, cloud, storm, water, and other beautiful and rarely rendered scenes in nature, by C. Breese and Co., attracted, as usual, a large share of attention. The transparencies by Mr. York, Mr. Gillo, and Mr. Ferneley, were also exceedingly fine. Various examples of photographic book illustrations were exhibited, amongst which the charming examples of photography issued in the *Philadelphia Photographer* obtained much admiration. There were not many plain enlargements, life size, exhibited; but an untouched example by Mr. Solomon, produced by the magnesium light, and a developed print by artificial light by Mr. T. Heaveside, of Durham, attracted attention. An enlarged landscape, "Gulf Creek, Pennsylvania," the negative by Mr. J. C. Browne, the enlargement by Mr. Albert Moore, both of Philadelphia, was very much admired for its rare perfection.

The coloured work was not, as a whole, so good as on former occasions. Some charming minatures by Mr. G. Croughton, some of the oil-coloured small pictures by Vandyke and Brown, some oil work by Mr. Chambers, a charming crayon sketch by Mr. E. Havell, and a similar work by Mr. Faulkner, an oil portrait by Mr. Cocking, some water colour work by Mr. B. J. Edwards, and a few others, were exceptions from the inferiority of which we have spoken.

The show of apparatus was not large, but some very capital instruments were exhibited. Rouch's tent had a series of very valuable improvements in the way of internal accommodation, and especially in capital ventilating facilities; no point of convenience in working seemed to be omitted. Mr. Meagher sent some of his capital cameras, revolving stereoscopes, &c. Mr. C. E. Elliott exhibited Cook's ingenious and useful camera for dry plates, in which a stock of plates is kept, fresh plates being ready after each exposure. Mr. Solomon exhibited enlarging and lantern arrangements with magnesium light. Murray and Heath exhibited Rowsell's excellent graphoscope, with prints to show its application. Xylonite Company exhibited non-actinic tissue, trays, &c., made from gun-cotton.

OBITUARY—THE REV. J. B. READE.

We have to record with very deep regret the death of the Rev. Joseph Bancroft Reade, M.A., F.R.S., one of the discoverers of the art of photography. After a very painful illness he died on Monday the 12th, at his residence, Bishopsbourne Rectory, in the seventy-first year of his age. At a very early period he began his experiments in the then unformed art of photography. Upwards of thirty years had elapsed since the first efforts made in sun-printing, by Wedgwood and Davy, had been given up as hopeless, and a new generation of experimentalists had taken up the abandoned task. Amongst these Mr. Reade was one of the most successful. He had succeeded, some time before Mr. Talbot made public his experiments, in securing the images of the solar microscope, as well as images by superposition of the original body on a prepared surface. To him was due the first use of gallic acid in the calotype process. Remembering that Davy had found white leather treated with the silver salt more sensitive than paper, Mr. Reade had recourse to this material for his experiments. Restrained at length in his frequent demands on his wife's stock of white kid gloves, the palms of which had been found valuable in prosecuting his experiments, it occurred to him to treat the paper with the material with which he supposed the leather to be dressed, and a solution of nut-galls, which was found an important accelerator, was forthwith employed in all his operations. This appears to have been the first use of gallo-nitrate of silver, subsequently to become so important as a developer, but, in the early experiments, employed as an accelerator only, to facilitate the more rapid production of a vigorous picture. The first illustration of its powers as a developer were due to an accident. One day, engaged in producing on sensitive paper an image of the *Trientalis Europæa* by superposition, he was compelled to abandon the attempt before the exposure had produced any impression. The paper, which was thrown aside in the dark without any trace of a picture, was found next day to possess a fully developed image, the continued action of the gallic acid and the silver salt with which the paper was impregnated completing the reduction commenced by light. So far as any record exists, this was the first developed photographic image, and although Mr. Reade did not at the time recognize the existence of a latent image, the first discovery of which he ceded to Mr. Talbot, in point of practice the priority was due to Mr. Reade, who produced the images of the solar microscope by the aid of the gallo-nitrate of silver as early as 1837, two years earlier than the publication of the discoveries of Talbot or Daguerre. Mr. Reade continued to the time of his death to take a deep interest in photography, contributing occasional papers on the subject to the British Association and to the Photographic Society. Of the latter he was a vice-president at the time of his death, taking an active part in its proceedings. He was also president of the Microscopic Society, and member of various other learned bodies, in all of which his noble and handsome presence and genial bearing will be missed, and his loss deeply regretted.

THE EMIGRATION OF PHOTOGRAPHERS TO AMERICA.

The following communication, written by a German photographer in America, M. [illegible], of New York, has been addressed to the *Photographische Mittheilungen*, and as it contains some practical advice and information useful to operators who may have the intention of emigrating, we have given it a place in our pages. The remarks are more especially addressed to members of the "Fatherland," but they nevertheless include much that is of general interest.

"From all quarters I have recently received requests from friends and colleagues for information as to whether it is a wise undertaking for photographic operators to emigrate to America just now, and whether they can do better in that country than at home. To many I have made personal replies, but as there are, doubtless, a great number who are ready and willing to listen to a few words on the subject of a photographer's fortunes in America, and not a few, moreover, who would be willing to try their luck in the New World, I hope to be permitted the use of this journal as a means of making known my opinions, and giving a reliable statement of my own experiences during the two years of my sojourn in the States. In the first place, then, it is very difficult for a photographer to obtain a situation at the moment of his arrival in this country, without he has some knowledge of the English language; as this is very rare with German operators, many are disappointed at the very outset. In my own case, I came to America without being able to speak or read one word of English. There are, it is true, many German photographers here, and the members of the German American Photographic Society do all in their power to afford advice and assistance; still, as I said before, it is a difficult matter to obtain an engagement at once. One ought, therefore, to possess sufficient means to keep one for a month or six weeks, until a situation has been found. Board and lodging is not, in truth, very expensive, fifteen shillings a week sufficing to provide the same; but he who has no money at all comes off badly, for people over here are by no means ready to give or lend, and there is no alternative but to work somehow and somewhere. And of ordinary work there is always enough to be had, the engagement offices and newspaper advertisements bidding for labour of all descriptions. Here a knowledge of English is not necessary, but only a good heart and industrious habits. The lowest pay for a day labourer is thirty shillings a week, and after working a few weeks one is again in a position to look out for an engagement. In the smallest photographic studios an ordinary workman will obtain thirty shillings per week, and this, of course, increases according to his abilities; in large galleries—as, for instance, those of Kurtz and Sarony—the first operators obtain from six to seven pounds per week, and a retoucher or artist obtains even more, according to his qualifications. Of course, an experience of some years is necessary before being able to fill a post of this kind satisfactorily. A negative retoucher earns three or four pounds a week, and need not exert himself very much thereby. The hours of working in the studio are from nine in the morning until five in the evening, and in the other work rooms from eight till six; these are, in fact, the acknowledged working hours in America.

"Should you be in possession of some capital, besides, perhaps, a set of apparatus, and you are desirous of being independent, it is of the greatest importance here, as, indeed, everywhere else, to have acquaintances, and likewise a knowledge of the English language. It is, of course, comparatively easy to rub along in localities much frequented by Germans—as, for instance, in Pennsylvania, St. Louis, Chicago, &c.—for there your own language will generally suffice; otherwise, you will not unfrequently be altogether floored by the first sentence addressed to you. And here, perhaps, it will not be out of place to mention a quaint experience of my own, arising from an ignorance of

English. On my first arrival, I walked through all the streets, one after the other, and whenever I saw a German name, in I went, with my hat under my arm, to ask for employment. Everywhere I received the same answer: they were very sorry, but they had no vacancy for the moment. At last I came to a gentleman with a German name, who either could not or would not understand me, and he, after making signs to the effect that I must first of all pay down my money, pointed to the apparatus, and said in a loud and distinct voice, 'Four for twenty-five cents, but you must pay in advance.'

"From this it will be seen that a photographer can scarcely be recommended to try his fortune under the great republic; but, at the same time, if there is no tie whatever to bind him to home, then let him come over by all means, for in this country nobody need starve. I myself have gone through the ordeal, and now, after two years, find myself so well placed that I hope never again to leave my new home. The principal thing is to be of good courage, and to have perseverance, and, above all, to keep one's eyes wide open, for in America people do not make their way by groping in the dark.

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THE URANIUM INTENSIFIER FOR NEGATIVES AND DIAPOSITIVES.

Dr. Liesegang urges in the *Photographisches Archiv* the special qualifications of the uranium intensifier. He has received confirmatory proofs of its good qualities from all sides, and quotes the following formula as being the most suitable proportions:—

Sugar	1 part
Red permanganate of potash ...	1 „
Nitrate of uranium	1 „
Water	30 to 50 parts

The employment of this modification of M. Selle's intensifier ensures a considerable thickening of the collodion film with perfect transparency of the light, so that where a transparent tone is required it is of very great use. The solution is applied to the fixed picture, but should be diluted with water, so as not to act upon the film too energetically. The image assumes at first a bluish tint, which gradually becomes browner, the film at the same time increasing in thickness, although the high lights retain their original transparency.

The uranium intensifier is, in most instances, to be preferred to all those in which mercury is an element. After the operation of intensifying is completed, the plates are thoroughly washed, and covered with a solution of gum or dextrine, for without this precaution the application of the varnish would render the film again clear.

In mixing the ingredients of the intensifier there is generally formed a dark brown precipitate, which is, however, quite innocuous. It is of importance to add a few drops of sulphuric acid as soon as the salts have been dissolved.

For the toning of diapositives there is no better mode of proceeding than to treat the plate with a solution of this kind.

For dark black tones the uranium intensifier is scarcely so useful as bichloride of mercury or sulphide of potassium, but for blue and brownish black tints it is very good indeed; the solution is, moreover, much more simple of manipulation and certain in its results than a mercury intensifier.

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CLAMPING THE HEAD-REST.

BY J. ANTHONY, M.D

Your illustration of the American form of head-rest puts me in mind of a simple appliance which I have used for rapid and efficient clamping, and which I have found so thoroughly satisfactory, that I am using it in my equatorial telescope for the instantaneous clamping and unclamping in declination which is so constantly taking place.

Makers of head-rests, too, often only send out a mode of clamping like the screw in fig. 1, and it requires no small force of finger to screw on an amount of friction to control the heavy vertical bar of the head-rest, the "coming down with a run" being no unfrequent phenomenon. I only know that I have had my finger and thumb quite numbed by the pressure on these screws. The appliance I now use is a very simple matter: a brass rod of some four inches long, flattened at one end so as to be pinned and soldered to the clamping screw, as fig. 2. This is, of course, a delicate but powerful lever, which a *touch* of the finger and thumb will control, and which I have found most satisfactory. It is evident that by filing the end of the screw this handle or lever can be made to assume a position, *when it clamps firmly*, parallel to the vertical bar, and so, as it were, to be hidden by it; the said handle pointing downwards, and being quite as much out of sight as the bar of the rest itself.

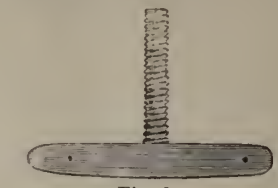

Fig. 1.

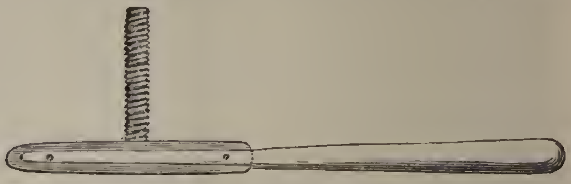

Fig. 2.

Washwood Heath, Dec. 9, 1870.

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ON THE PRODUCTION OF THE BROMIDES OF POTASSIUM AND SODIUM.

In a recent number of the *Comptes Rendus*, M. Castelhaz gives a method for producing bromide of sodium—a plan which can further be employed for the preparation of bromide of potassium. He first recommends the production of bromide of ammonia by adding bromine drop by drop to pure dilute ammonia; an operation, however, which must be conducted in a suitable apparatus in order to prevent loss. For large manufacturing operations a Wolff's bottle, of stoneware, of large dimensions, should be used, so that the condensation of the bromine and ammonia vapours, occasioned by the reaction of the escaping nitrogen, may take place in the interior of the same. The evaporation of the solution of bromide of ammonium thus formed, in order to separate the easily crystallizable bromide of ammonium, is conducted in an iron retort, with a clay receiver. In the first operation, the superfluous ammonia condenses with some of the bromide of ammonium, and the condensed liquid can then be used for the succeeding operation.

The crystallized bromide of ammonium must be again decomposed in the iron retort by means of caustic soda or carbonate of soda; if the former is used, ammonia is condensed in the clay or glass receiver, but if the latter, carbonate of ammonia is formed. That the soda preparation employed should be free from chlorine or sulphuric acid is a matter of course; on the evaporation of the bromide of sodium the anhydrous salt separates of its own accord in cubic crystals.

The principal advantage of M. Castelhaz's mode of proceeding consists in the fact, that in the ordinary methods of production from bromide of zinc or bromide of iron, and the conversion of the same with carbonate of soda into bromide of sodium, the precipitate of carbonate of zinc or iron invariably retained some notable quantity of the bromine, resulting in a not unimportant loss when operations on a large scale were undertaken, the bromine not being recoverable even by a prolonged system of washing; moreover, the old plan of proceeding was a more tedious one. In preparing the bromide of sodium by the introduction of bromine into a hot soda lye, much loss of bromine is also occasioned, and the complete separation of the bromide of sodium from the other bromine salts formed at the same time is exceedingly difficult.

By a like mode of proceeding may the bromide of potassium be prepared.

BACKING FOR DRY PLATES.

BY M. CAREY LEA.[*]

Some time since I mentioned in your columns the result of experiments in backing dry plates. Since then I have made a great number of further experiments upon the matter, on plates used for making negatives, and, in doing so, have noticed a condition necessary to success which has not been before pointed out.

It is, of course, necessary that the backing should be in actual contact with the glass—optical contact. If the slightest separation takes place, admitting the thinnest film of air, or even supposing it possible that a vacuum were left between the backing, it would be ineffectual. Now it has become evident to me that the efficacy of the backing is very much influenced by the amount of drying that a plate receives. For example, if a plate be backed at the same time that it is made, and if the back and front be left to dry together over sulphuric acid, both back and front will be in excellent condition at the end of thirty-six hours. But if the drying be continued for a week—that is, if, having no occasion to use the plate, it is simply left in the box for a week—the backing may no longer be capable of preventing blurring.

My object at present is to explain why this is, and how this injurious effect of continued drying may be avoided.

First, as to appearance. If the backing has proved defective in places, this condition can generally be detected by the eye. If we look at the film side by reflected light in the dark-room, it should present a uniform dark look, except, of course, at the edges, to which the backing does not quite reach. If, instead of this uniform dark look, there are spots a little lighter and clouded, we may be sure that the coat has, in those places, separated itself from the glass. The coat may look perfectly firm, solid when examined from behind, and show not the least tendency to flake off, and yet, if the film exhibit this clouded appearance, there will be a tendency to blurring when the plate is exposed and developed.

The best way of avoiding this trouble is to increase the dose of sugar. A convenient method of operating is as follows:—

Take about half a drachm of aniline brown, and grind it in a porcelain cup with a couple of ounces of hot water. Stir in four ounces of finely powdered white sugar, and when it is pretty well dissolved, add three ounces of finely powdered gum-arabic of good quality. Use just enough water in addition to the first quantity to get as thick a paste as can be well spread over the glass. If the colour is not an extremely deep brown-red, even when put on in a thin coat, add more aniline brown. Finally, mix in about twenty drops of carbolic acid. By this last addition, and by using a porcelain cup with well-fitting cover, to prevent drying, the mixture will keep in good order for a long time, thus avoiding the trouble of a fresh preparation for each set of plates.

Although aniline brown is excellent in respect of its protection, and although (which is very desirable) a little of it introduced by accident into the developing bath is not hurtful to the development, yet it is objectionable in consequence of staining the hands. I shall later try to find and substitute some other colour that is right in all respects. But the matter to which these present remarks are directed, the partial separation of certain sorts of backing by continued drying is independent of the colour used, and holds for mixtures of gum and sugar with Spanish brown, or other colouring matter that may be employed.

EDWARDS'S NEW COMBINATION PRINTING FRAME.

BY J. T. TAYLOR.[*]

Agreeably with the request made at the last meeting of this Society, that I should bring under the notice of the members on this occasion the new frame invented by Mr. Edwards for combination printing, and describe its method of action, I do so with pleasure.

But, before exhibiting the frame and specimens of the work produced by its agency, let me explain that the object sought to be obtained by it is the printing from two or more negatives by a mechanical system of registration so exact that by its means can be obtained combination prints the junction of the several parts of which are so well effected as not to be readily, if at all, perceived.

The combination prints by Rejlander and Robinson are matters of history. The special method of printing with which we shall have principally to do on this occasion is the associating in one picture a landscape background with a portrait, each from a different negative. That this kind of printing has previously been done, and well done too, the works of this description by Edge and Parry, of Preston, and Robinson and Thompson, of Liverpool, which have on previous occasions been submitted to this Society, fully attest.

But there was one important point of difference between the methods practised by these gentlemen and Mr. Edwards—theirs were, and still are, secret processes; Mr. Edwards's is public. The latter gentleman not only describes how his beautiful pictures have been obtained; he also puts it in the power of every photographer to obtain similar results. We are, therefore, indebted to him for making public his invention—one which, before long, will exercise an important bearing on artistic composition as applied to photography.

The frame is the subject of a patent—and why not? Ought not an inventor to be put in such a position as to be not only recouped, but rewarded for the toil—both mental and physical—that has usually to be undergone before an invention is ripe for the public eye, not to speak of the heavy pecuniary outlay which is frequently attendant upon it during the experimental stages of its career? And shall photographers grudge to the person who has given us something of which previously we were not in possession his fitting reward? I trust not.

The specimens of prints submitted to-night consist of portraits with outdoor accessories and backgrounds composed of landscape scenery. It is obvious, however, that there are numerous other characters of compositions in which the patent frame may be utilised. Many indoor scenes and subjects, such as family groups arranged in the parlour or library, may be obtained with as much ease as a cricketing, a pic-nic, a boating, or any other outdoor group. There are many interiors so feebly lighted as to require an exposure so long as to far transcend the powers of endurance possessed by mortals. By this invention we have now secured the means of introducing figures into these interiors. If necessary or desirable, a parson may be represented as if preaching in his own pulpit.

Very little description will suffice for the printing-frame which I now submit to your notice. It consists, as you see, of a pair of frames to hold the negatives from which the prints are to be made. The negative plates are held firmly in their places in the frames by means of a bar pressed against the end of the plate by a screw. It consists, secondly, of a frame or frames to which the sensitive paper or tissue is firmly attached. These frames or boards which carry the sensitive paper are made, by means of guiding pegs or supports, to fit or register exactly to the frames which carry the negatives to be used in printing—the whole being clamped or fastened together to ensure contact between the surfaces of the paper or tissue and the negatives during the operation of printing, thus securing accuracy in the various parts of the print or picture, and obviating the necessity of adjusting the prints by hand in their proper position on the negative used in their production.

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[*] *Philadelphia Photographer.*

[*] Read at a meeting of the South London Photographic Society, Dec. 8, 1870.

In using these frames for making combination prints the negatives are fixed in the frames by means of the sliding bar and screw, and in the case of one or more of the negatives not being of the proper size to fit the frame or frames, the negative is attached in its right position, by means of a suitable cement, to a glass plate of the proper size to suit the frame, and, having taken a proof from the negative or negatives from which masks are required to be cut for the protection of portions of the prints, the mask or masks are cut out, following the outlines of those portions of the print which are required to be protected from the action of the light during the operation of printing other parts of the picture. These are attached to the negatives in the following manner:—A piece of sensitive paper is fixed to the inner frame and placed in contact with the frame carrying the negative, and exposed to the light until the outlines of the picture are sufficiently visible. The frames are then separated, and the mask is adjusted over the parts of the picture to be protected from the light in the subsequent operations, being held in position on the print by a little india-rubber solution applied to the edges. A larger quantity of the same solution is then applied to the surface of the mask, and the frame carrying the print and mask being brought into contact with the negative from which the next portion of the picture is to be made, the whole is pressed together for a few seconds; the smaller frame is then lifted away, and the mask remains adhering to the negative in its proper position

When required to remove the mask from the varnished negative it is only necessary to moisten the same with a little benzole, when the mask may be removed without injury to the negative.

By this plan prints in silver or carbon can be produced from any number of suitable negatives, the masks being adjusted in the manner described; and, when this is done, the prints may be made in about the same time as ordinary prints from single negatives by using a sufficient number of frames to carry the negatives, as a similar number of frames or boards to carry the paper, tissue, or films of which the prints are made are provided.

In some frames of very large dimensions that I have seen in the possession of Col. Stuart Wortly, who, I believe, is a licensee of Mr. Edwards, the registration guides are made of metal instead of wood as in those before you. It does not, however, appear possible to surpass in excellence the fitting of those now submitted.

SOME REMARKS ON GENERAL APPLICATIONS OF PHOTOGRAPHY, WITH AN ACCOUNT OF A METHOD OF A MAKING COMBINED NEGATIVE.

BY WILLIAM COBB.*

It is well for the advancement of our beautiful art that each particular branch—and surely no other art can boast so great a variety!—has its votaries, who, working on with a steady purpose, though oftentimes, it may be, discomfited at the difficulties which ever and anon present themselves, ultimately attain to success as the reward of their diligence.

It is well, also, that the same facilities are open to the "hewers of wood and drawers of water" for casting into the general treasury of knowledge any little mite of information which they may have either accidentally stumbled upon, or, by careful investigation, brought to light, as to the more skilled workmen whose labours are productive of results well calculated to excite within us the spirit of imitation.

That such a system must be, and indeed, has been, of great practical value in the interchanging of ideas and disseminating useful hints, benefitting, to a greater or less degree, every member of our fraternity, no one will be found to dispute. Is it not owing to this division of labour, and the collecting together of information from so many different sources, like tributaries flowing into one vast stream, that photography owes its present proud position? Within the memory of the youngest here present, was it not a puny little infant, scarcely heard of beyond the pale of its own nursery? But, being carefully tended and narrowly watched against the evil influences of some who would gladly have overlaid it, or taken any other means of putting it to an untimely end, it grew and flourished, and eventually attained to its present sturdy proportions, and, like a mighty giant in the land, it holds its own against all opposition. And so it will, for how can it be otherwise when every department of art-science and commerce alike calls loudly for its aid?

It is well known that artists of the highest standing are only too glad to avail themselves of the great assistance derivable from photography in its wonderful power of delineating form and detail; yet, passing strange it is, and much to be regretted also, that many amongst them are to be found who, through a deep-seated prejudice, are unwilling at any time publicly to recognise its value, merely bestowing upon it when occasion requires, or, perhaps I might almost say, compels them in some way or another to notice it, a patronising, off-hand chuck under the chin.

With the man of science, however, our hero fares better. Instead of being carefully placed behind a few feet, it may be, of canvas, and every now and then slily and cautiously appealed to whenever any difficulty and knotty point requires to be demonstrated, it openly and independently asserts its own rights; and in the fact of its being brought forward to prove the correctness of the data, or the profundity of the knowledge of him who uses it for that especial purpose, lies the proof of its being equal to and worthy of the position thus assigned to it.

And who shall say to what extent the application of photography to military operations has contributed to the present painful humiliation of one of the most enlightened and proudest countries in the world's history? A bold assertion this, some will be disposed to say; but are we not cognisant of facts which are amply sufficient to bear me out in this, which at first sight may appear an extravagant idea, when we are told that the soldiers of the invading forces were furnished with maps produced by photographic agency, and which could not by any other means have been supplied? These they were bound to study, and so make themselves familiar with all the weak and assailable points of the country they were invading. We can but admire its wonderful capabilities, whilst we lament that such a powerful auxiliary should be brought to bear its mighty influence upon a work so cruel and so devastating in its nature.

The present meeting having been occupied in the despatch of other and more important business, I will at once proceed to the subject which I desire more particularly to bring before your notice—viz., a new method of combination printing—new, at least, so far as I am aware of anything which has been heretofore published. This particular branch of our art presents still to my mind a wide field for the experimentalist. Notwithstanding the very beautiful specimens which are occasionally brought under our notice, productions of this kind are, as a rule, so painfully suggestive of the use of scissors and painted masks that a feeling of disgust is created in the mind rather than one of admiration.

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* Read at a meeting of the South London Photographic Society, Dec. 8, 1870.

Having experimented considerably in this direction, I have much pleasure in bringing before you the results, regretting, however, that owing to the lack of convenience, I have only just sufficient in the way of specimens to demonstrate my system.

In making combination pictures it is, of course, necessary to use masks; but the difficulty lies in producing them so as to meet all requirements. Availing myself of the knowledge that a transparency made from any given negative, and then placed in immediate contact with it, gives at once a perfect mask, I set to work with the idea that something useful might be made of it.

In order to procure what I wanted, I found it was necessary to take two negatives of the same subject, one with a graduated and the other with a black background. Having obtained these, proceed as follows:—Print a transparency from the figure with the black background, dry, and fix. Now coat that same negative (that is, the one with the black background) with collodio-chloride, place this transparency over it, and allow it to print. Now print upon that the view which it is desired to introduce (this will, of course, be a transparent view upon a negative figure); fix and dry, and the combined negative is finished.

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THE BULB SYRINGE APPLIED TO PHOTOGRAPHY.

BY JOHN C. BROWNE.*

Photography in the field by the use of wet plates is subject to many inconveniences, one of the greatest being the difficulty of washing the plate thoroughly in the dark tent after development, especially if the supply of water is limited. This more particularly applies to tents of a tripod form, where all of the manipulation is conducted on the ground. Until recently I used a tin cup or pint measure for this purpose, filling it from a bucket, or stream of water if close by; but often, at a critical moment, the cup would be upset and the plate spoiled before the action of the iron could be checked.

Some months ago I noticed a plan of washing adopted by Mr. Jesse A. Graves, of the Delaware Water Gap, which has advantages over any plan that I have seen used for outdoor work. The apparatus is a bulb syringe (see cut).

Squeeze the rubber bulb with the hand, so that all the air is forced out, then place it under water; it will sink at once by its own weight, and in a few minutes will be filled, and ready for washing the plate. The water cannot run out unless the bulb be pressed, so that it may be tossed into the tent, and lay in any position without spilling. When it is desirable to wash the plate, squeeze the bulb, and a stream of water will be thrown over every part of it without wasting one half of the water, as is the case sometimes when pouring from a tin cup. Should the surface of the water from which the supply is taken be covered with floating leaves, sticks, &c., the bulb syringe, having a small opening, and being below the surface of the water, sucks its supply free from dirt, and cleanses the tender collodion film much better than when the water has been dipped from the top. A syringe of one pint capacity will wash a 6½ by 8½ plate more thoroughly than a quart of water poured over it from a tin cup, and at a great saving of time.

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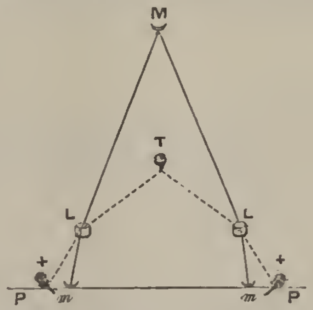
MOONLIGHT PICTURES.

Mr. J. Baker, of Buffalo, writing to our Philadelphia contemporary, says:—"I have been reading about Robinson's moonlight picture, which some critics assert is a view exposed and taken by moonlight. This idea is not for a moment tolerable. The picture is an instantaneous one. Now the light that the full moon sheds on a landscape is many thousand times less than that of the sun, and the only picture that can be taken by moonlight is her own face, and that is really done by sunlight, *i. e.*, the sun's rays reflected from the moon.

I have not seen the picture in question, but, from the description, fail to see how it differs from the quasi "moonlight" stereographs of Niagara, which are made in quantity by Bierstadt, Curtiss, and others, at the Falls.

A day with floating clouds is selected. When the sun is low, hanging over the water, the camera is pointed to the light. At the moment a cloud passes over the sun the exposure is made; the result is a moonlight effect. The clouds near the sun are brightly illuminated, and a wake of light is in the water. A moon, if required, is painted on the negative.

Some of these are very good. The heavy shadows and sharp lights, with a general faint illumination, make fine Rembrandts, and simulate moonlight extremely well. But when closely examined in the stereoscope, sometimes a curious defect is apparent. The moon seems very near, quite over the foreground. This is caused by the two images of the moon being in the mounted stereograph too far apart. This is easiest shown by a little drawing. A tree near by must throw its images further apart on the negative than the distant moon, and as the picture taken by the right-hand tube is placed for the right eye on the mount, and similarly the picture by the left tube goes to the left eye, the relative positions of the pictured moon and tree remain as in the diagram—to wit: PP, the plate; LL, the lenses; M, the moon; *m m*, image of the moon; T, the tree; and *t t*, the image of the tree.



Most likely Robinson's picture, being large, has a genuine photograph of the moon printed in. It does not seem too much to assert that the photograph called "First Hour of Night" was produced substantially in the above way, and, indeed, could have been made in no other—in which opinion, no doubt, Mr. Robinson will, in time, confirm us.

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Correspondence.

PIRACY AND COPYRIGHT.

Sir,—I think the latitude and space you have accorded in your columns to Messrs. Knight and Cunnington say much for your sense of fair play and no favour, for I cannot doubt on which side your sympathies are, and it must have been from a desire to exercise the utmost impartiality that you have not, ere this, expressed a very decided opinion on their claims.

Will you allow an uninterested and totally unknown correspondent to do so? It seems to me that those gentlemen wish—well, to *infringe* the alleged copyrights of certain publishers. They do not attempt to deny that Mr. Brooks and others have paid a large consideration (often thousands of pounds) to the artist and engraver, and, to enable them to recoup themselves for this outlay, they solely depend upon the exclusive sale of their engravings. They do not assert that it is improper to pay an artist for the fruit of his genius, or an engraver for his skill and years of toil; nor, as far as I can see, do they consider the principle of copyright anything but what it is—a highly necessary and beneficent protection of labour against rapacity. They take no higher ground than this: the law of copyright is involved in some technical difficulties, and some points of it are dubious. Therefore they in effect say, "We are justified in hunting out some minute groove, in the spelling of a name, in the date, or in the legal phraseology, and if we find it, we may appropriate another man's property, with considerable chances of escaping punishment." In Mr. Cunnington's remarks on Mr. Brooks's copyrights, he does not say that the artist had not the right to sell them, or that Mr. Brooks did not well and duly buy and pay for them, but seeks to prove that a man's goods may not be his own, because there may have been an error in the date of a deed of assignment. The parties thereto, perhaps, should have been described as trustees instead of liquidators, and the draughtsman may have made an error in spelling Mr. Brooks's name.

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* *Philadelphia Photographer.*

I have heard of a man who escaped punishment for duck-stealing, because it turned out that what the indictment described as a duck was, in reality, a drake; but I doubt if he afterwards wrote to the newspaper, and, in tones of injured innocence, claimed the right to steal (I beg pardon—to infringe upon) all manner of poultry. I own the duck-stealer probably lacked Mr. Cunnington's ability and education, and that seems to show that a good sword may cut both ways. To take him at his very best, Mr. Cunnington's whole object is to defeat a righteous law. To break a law we know is unsafe.

With regard to Mr. Knight, I have had occasion lately to pass his shop, and I looked into his windows with much curiosity. If, Mr. Editor, a tender conscience should ever lead you to doubt whether you have not dealt rather roughly with him in your last issue, let me advise you to do likewise, and I can answer for it, you will not be troubled again with any misgivings. If what I saw did not break the law of copyright, it certainly defeated it, and I cannot think that such people have much claim upon our sympathy.—I am, sir, yours respectfully,
Justitia.

GLYCERINE AND LITHARGE CEMENT.

Sir,—I thank you for directing attention to the litharge and glycerine cement. By following the simple directions you gave, it has, in my case, succeeded admirably, and given great satisfaction to several persons here.

Unable to obtain common glycerine, I was obliged to buy Price's best. The chemist from whom I had it gave his opinion wholly against it as a cement, but I was resolved to try it; and, on subsequently showing it to him in a solid lump (a portion of which I enclose) he was much surprised.

The first article I mended was a fine, large, and heavy Italian vase, which had been thrown down in a studio, and was badly broken This has united capitally. I then firmly fastened the brass top to the glass reservoir of a paraffine lamp. Two little lumps of brass have also been made to adhere very firmly, and only separated when they were afterwards being filed in a vice. This latter was a mere experiment, and done rather carelessly.

I have applied Simon's Geneva essence to it (a strong spirit used for cleaning watches), and also nitric acid, allowing the acid to boil on it for some minutes; but the only effect produced was that it appeared to be harder. On subsequently putting the lump into water, minute air-bubbles were discharged from it, and the water became slightly milky, which afterwards became a white precipitate. Perhaps this was caused by the previous application of the essence and acid before named. This also seemed to increase the hardness.

If "W. L." made "dough" of the ingredients instead of a "thick cream," he did not follow your directions. The cement becomes hard in *five or six hours*, but I should leave it longer before using the articles to which it is applied.—I am, yours truly,
T B.

Cheltenham, December 11th, 1870.

[Our correspondent obligingly encloses a piece of the hardened cement, which resembles terra-cotta in hardness and toughness.—Ed.]

GLYCERINE AND LITHARGE CEMENT.

Dear Sir,—For the information of your correspondent "W. L." I may state that I have successfully used the litharge and glycerine cement, exactly as quoted in your Journal, for luting a porcelain funnel into a hole cut in the bottom of a china basin, which was a very difficult joint to make. I found the cement set in a few hours quite hard and watertight. I used Price's glycerine.—Yours faithfully, F. R. Window.

63*a*, *Baker Street, Portman Square, December 14th*, 1870.

ALBUMS FOR PHOTOGRAPHS.

Sir,—I have read your article in last week's News relative to a new style of album for portraits. Allow me to make a suggestion to manufacturers for what, I think, would be an improvement in the scrap album now in use.

I daresay other persons as well as myself have discovered (to their great annoyance, no doubt), after a short time, the photographs in scrap albums very much scratched and smeared, which, of course, is caused by the pictures coming in contact with each other when the album is opened and shut, the beauty of the photographs being thus soon destroyed. I have several scrap albums, with their contents entirely spoiled in this way. One of them has been in use only about eighteen months, so that I should very much like to see an improvement in that class of album.

My suggestion to prevent such mischief is, to make the leaves of the album of the same thickness as the ordinary portrait albums, and that places of various sizes (to suit photographs, say, from 10 by 8 down to C.D.V.) be sunk in the cardboard about one-sixteenth of an inch deep. The cardboard should be tinted—a cream colour is generally most suited for landscapes—so that when the places are cut, a white edge would be left round the sunk opening, which, I think, would be very effective, the cream or other tint being only on the surface of the cardboard, the inside of the board being white. Or, another plan would be, to make the entire surface of the page sunk, with a raised margin of about one and a-half inch wide all round; the inside of the sunk part would take either one 10 by 8, or two cabinets, or four C.D.V. photographs.

I enclose a section of a leaf to explain my idea more clearly.—I beg to remain, yours respectfully, A. Nicholls.

Post Office Terrace, Cambridge, December 12th, 1870.

PACKING AT THE EXHIBITION.

Dear Sir,—I have recently had the honour of exhibiting six photographs in Conduit Street. They were put into gilt frames, worth about fifteen shillings each, were simply yet securely packed, with a screw at each end, in wooden rims holding a pair. Advised by post, and accompanied by a polite request that they might be returned to the same places they then occupied, known by a corresponding letter on the frame and on the rim.

To-day the railway people brought me a box which, on every movement, made such an ominous rattle, that the driver wished my assistant to examine the contents whilst he waited. He did so, and found a most unique example of packing, and an equally unique result. The intelligent individual who had charge of that department seems to have scorned all attempt at matching the letters, and to have abominated screws. Had he pitchforked some of the frames into the case they could have reached me in no worse condition. To be brief, but two out of the six frames are presentable, and these are not without damage. The rest must be regilded at a cost of (say) 40s., which, added to the 8s. 6d. paid for carriage to and fro, will represent the sum I may be supposed to lay, with all humility, at the altar of the science for the advancement of our beautiful art.

Having a conscience, and withal, let me hope, some common sense, I could make no claim on the railway company. My only claim is a moral one on the officers of the society, who promise ordinary care in the repacking, and which, at least, one might look for. If this be not secured, and other contributors fare as badly as myself, there is no need of a prophet to augur one of two results—either pictures will go up to the annual exhibition garnished with washable gilt frames, or a wholesome dread of the carver and gilder will keep them away altogether.—I remain, dear sir, yours truly, R. H. P.

GLASS DIPPERS.

Dear Sir,—I find in the **News** to-day how to save your glass dippers; but I am sure they make an error when they recommend "gutta-percha." I would advise all photographers to keep gutta-percha away from their "baths." I mean the kind which is sold at the present time. The best thing they can use is india-rubber, same as sample enclosed. I shall be glad to supply the same, which they can depend upon. I do not offer it on account of profit, but for the good to photography.—Yours truly, J. F. **Haddermin**.

Walsall, December 10th, 1870.

[The sample enclosed is an excellent sample of pure india-rubber.—Ed.]

Proceedings of Societies.

Amateur Photographic Association.

A council meeting of the above Society was held Nov. 24th, T. **Sopwith**, Esq., M.A., F.R.S., in the chair. The minutes of the last meeting having been read and confirmed, the following members and subscribers were proposed and elected:—Col. J. R. Sladen; Col. G. J. White; Lieut. J. Butler; Charles Copeland, Esq., C.E.; R Wood, Esq.; E. R. Whitwell, Esq.; Nowrojce Manekjee Settna, Esq.; E. Kennard, Esq.; H. D. Pochin, Esq.; R. W. Armstrong, Esq.; E. R. Bembridge, Esq.; Anbrey Coventry, Esq.; J. G. Livesay, Esq.; H. Sampson, Esq.

Mr. **Glaisher** called the attention of the meeting to the fact of the negatives having been sent so much later this year than usual, and the great difficulty, consequently, experienced in obtaining good proofs during the months of November and December to submit to the council. After some discussion it was decided that in future the negatives be called in as taken.

Sir Autonio Brady, and W. D. Howard, Esq., having been proposed at the previous meeting, were elected members of the council.

The **Secretary** laid before the meeting a considerable number, though but a small proportion, of the new pictures, amongst which were some, very fine, by new members.

A. J. **Melhuish**, Hon. Sec.

South London Photographic Society.

The annual meeting of this Society was held in the City of London College on the evening of Thursday, December 8th, the Rev. F. F. **Statham**, M.A., in the chair.

The minutes of a previous meeting having been read and confirmed,

Mr. J. T. **Taylor** read a paper descriptive of the combination printing frame of Mr. J. B. Edwards, illustrating the paper by examples of the frames in question, and of prints consisting of portraits with natural landscape backgrounds produced by their aid (see p. 593).

Mr. J. B. **Edwards**, in response to an invitation from the chairman, stated his experience in combination printing which had led to the invention of the frames in question. He had found it almost impossible to get perfect junction by the ordinary appliances in small and delicate prints. The contraction and expansion of the paper, in consequence of variation in its degree of dryness and other causes, made registration very difficult; and this difficulty, he thought, contributed much to explain the fact that so few were produced of a class of portraits which almost every one admired. It had struck him that if a scheme of mechanical registration could be devised, in which personal skill and the condition of the paper were comparatively unimportant, it would materially aid the photographic printer in producing such work. The examples he exhibited were all ordinary business work done by an ordinary printer. The foregrounds, made up with a few weeds, grasses, &c., and rough cork bark, which was capital in texture and colour for photographic work, were easily managed. A light background, graduated to the bottom, was employed, the gradation facilitating the joining of the foreground and background. A carbon print, with double printing, which he exhibited, showed that the registration was quite independent of sight, and a transparency on a glass plate, produced at two printings before development, illustrated the same thing. Regarding the question of price and license, he had aimed at supplying the frames at the lowest price compatible with goodness, and he had pleasure in now announcing that in future there would be no charge for license whatever.

The **Chairman**, in proposing a vote of thanks to Mr. Taylor and Mr. Edwards, said that every one had felt the necessity of getting out of the groove of the use of commonplace conventional accessories in portraiture, and various members of this Society had contributed to such an aim. The invention which had been brought under notice materially aided in this direction, and seemed to have reduced combination printing to the greatest simplicity. The examples exhibited were exceedingly perfect and beautiful.

Mr. **Sebastian Davis**, speaking of the advantage which these frames presented to landscape photographers in printing-in skies, &c., suggested that if two negatives of the same subject were taken, one with foreground objects perfect, and the other with distance and sky perfect, some exceedingly fine prints might be produced.

An animated conversation on this subject followed.

Mr. **Blanchard** saw numberless valuable applications of such a mode of printing in connection with landscape photography: not simply figures, but other parts might be printed-in or substituted for unsatisfactory objects in the original negative.

The **Chairman** thought it not improbable that parts of an unsatisfactory portrait might be substituted in like manner.

Mr. **Wharton Simpson** said that portraitists might often be saved much trouble in relation to groups. It was a very common thing for one person, by moving, frowning, or other fault, to spoil a group in which all else were good. In the next negative, probably, that person was satisfactory, but another had been in fault. By this means the faulty portrait could be eliminated, and another substituted with much less trouble than was involved in proceeding until a negative was obtained in which all were perfect.

Mr. **Cobb** read a paper on a method of producing combined negatives, and exhibited examples (see p. 594).

In the course of a conversation which followed, Mr. **Simpson** mentioned the method which Mr. Burgess employed to print a landscape background, by means of collodio-chloride, on a suitable portrait negative.

Mr. **Henderson** said that if a thin transparency of a landscape were placed in front of the sensitive plate in the camera, a landscape background would be obtained without any appreciable interference with the figure.

A conversation on this subject followed.

Mr. **Edwards** pointed out that from such a transparency as that he exhibited, upon which a portrait and landscape background had been printed, a negative could easily be reproduced.

After some further conversation, and a vote of thanks, the subject terminated.

The **Secretary** then read the following report:—

"Your Committee, in presenting the annual report for the session now ended, desire to state that their term of office has extended over a very lengthened period, arising from the change in the termination of the current year to December instead of to June. They trust that the alteration will be found to have carried out the desired object; viz., to simplify the transactions of the Society by bringing them all under one date, instead of part of two as formerly.

"Your Committee have the pleasing duty to announce that the average number of members has been fully sustained, the places of those who have left having been filled up by many new members.

"Taking into consideration the very high eminence to which the art science of photography has now attained, and whilst, as it were, resting before attempting to soar higher still, it might be said that it is travelling upon a level pathway, so that, looked at from such a standpoint, the meetings of the South London Photographic Society have quite kept up the interest which they have hitherto enjoyed.

"As this Society has always encouraged and fostered rising talent, your Committee would urge upon its younger members the desirability of pressing forwards to the front, and taking upon them a more active part in the discussion of all matters appertaining to the advancement of photography in general.

"The following papers have been read during the session:—'On the Aspects and Prospects of Photography,' by Mr. S. Fry. 'On Recent Improvements in Carbon Printing,' by Mr. J. R. Johnson. This subject was illustrated by Mr. Johnson going through the whole of the manipulations connected with carbon printing.

'On Dodges,' by Mr. Dunmore. 'Photography as an Aid to the Artist,' by Mr. Croughton. 'Some General Remarks on Applications of Photography, with an Account of a Method of Making a Combined Negative,' by Mr. Cobb. 'On Combination Printing Frames,' by Mr. J. T. Taylor.

"The question-box has again been the means of affording matter for most interesting discussions. The questions selected were:—'Can a faded photograph be restored?' 'Which is the best method of vignetting portraits?' 'Which is the best method of combining natural foregrounds and backgrounds with portraits?'

"Two meetings have been devoted to a conversation upon each of the great exhibitions held in Conduit Street during the session; and, lastly, the minor exhibition meeting amongst the members has fully carried on the interest of those previously held.

"The following gentlemen have also exhibited photographs and objects of interest connected with the art science:—Messrs. Blanchard, Chancellor, Cobb, H. Cooper, Cocking, Croughton, T. Sebastian Davis, Dunmore, Edwards, Howard, Hunter, Henderson, Baynham Jones, W. H. Price, H. P. Robinson, Rogerson, G. Wharton Simpson, and J. T. Taylor.

"In conclusion, your Committee congratulate the members that the transactions of the Society during the session have been full of varied interest, ranging from the reading of a paper to the simple conversational mode of carrying on some of the discussions which is a marked feature of your Society.

TREASURER'S ACCOUNT.

Treasurer in Account with the South London Photographic Society.

Dr. Income.		Expenditure.	Cr.
To Balance last account ...	£2 19 3	By Paid Mr. Harman, Prints	£3 12 0
,, Fifteen Subscribers to Christmas, 1870	7 17 6	,, Secretary, petty cash ...	1 10 10
,, Eight do. do.	4 4 4	,, Hire of rooms.	4 14 6
		,, Gratuity to messenger...	0 2 6
		,, Balance	5 0 11
	£15 0 9		£15 0 9

The officers were elected for the ensuing year as follows:—

President—Rev. F. F. Statham, M.A., F.G.S.

Vice-Presidents—Sebastian Davis, G. Wbarton Simpson, M.A., F.S.A., Valentine Blanchard.

Treasurer—Mr. Noel Fitch, Guydyr Villa, St. John's Road, Brixton.

Committee—Messrs. Cobb, Elliott, J. R. Johnson, J. T. Taylor, G. Croughton, Dunmore, Hunter.

Secretary—Edwin Cocking, 57, Queen's Road, Peckham.

Votes of thanks to the President, Treasurer, Secretary, and Vice-Presidents were duly proposed, seconded, and acknowledged.

After some further business conversation, it was announced that the annual dinner of the Society would be held on Saturday, the 17th, at five P.M., at St. James's Hall Restaurant, Regent Street.

The proceedings then terminated.

Photographic Society of London.

The usual monthly meeting of this Society was held in the Architectural Gallery, Conduit Street, on the evening of Tuesday, December 13th, Dr. Mann in the chair.

The minutes of a former meeting having been read and confirmed, the following gentlemen were duly elected members of the Society: Messrs. Andrews of Swansea, Blair of Perth, Warwick Brookes of Manchester, W. Downey of Newcastle, Marshall Wane of Douglas, Russell of Chichester, Nichols of Cambridge, F. C. Earl of Worcester, and A. P. Chambers, A. Ford, C. J. Fox, A. E. Fradelle, F. Piercy, H. T. Reade, and Col. Stuart Wortley, of London.

The Chairman then read the seventh rule, relating to the election of officers, and stated the following as the nominations of the council:—Mr. Glaisher as president, Dr. Mann as vice-president to replace the Rev. J. B. Reade, of whom the Society had just been deprived by death. The retiring members of council were Dr. Mann, Mr. Mayall, Mr. H. P. Robinson, Mr. Hughes, Mr. J. R. Johnson. The following gentlemen were proposed for election or re-election: Dr. Anthony, Mr. P. Le Neve Foster, Mr. Hughes, Mr. F. Bedford, and Mr. Robinson.

The Secretary then made a few remarks on the success of the late exhibition, and mentioned that the receipts and expenditure very nearly balanced each other.

The Chairman exhibited an ingenious wooden dipper sent by Mr. R. Day, who had used a similar one for six years. It was made of three strips of lance-wood with a cross-piece of wood at the top, and of silver wire at the bottom, and hooked rests of silver wire for the plate. It was light, portable, safe, and durable.

Mr. H. Baden Pritchard read a paper on reproducing negatives from faded prints by means of collodio-chloride of silver. He also exhibited some very excellent illustrations of the method, the new prints surpassing the old ones from which they were produced. Some of the prints were in carbon, but in colour and general qualities closely resembling silver prints.

After some conversation on the excellence of the results, and a vote of thanks,

The Secretary read a paper by Mr. D. Spill, on the preparation of xylonite and its applications to photographic purposes. Examples were shown of the various waterproof fabrics, adiactinic tissues, dishes, &c., made of the new material. The basis of the material is a low form of gun-cotton, chiefly made from cotton waste, with little explosive power, burning slowly, and leaving much carbonaceous ash. This is dissolved in various solvents, the most important of which is camphorated oil at a high temperature, by which a plastic paste is found capable of use for various purposes.

Some conversation followed as to the temperature at which gun-cotton usually exploded, which was mentioned as 350° Fah. for the most explosive forms. It was noticed that in the formation of the xyloidin for the purpose in question, four parts of sulphuric acid to one of nitric acid were employed.

Mr. Sebastian Davis said, in Schonbein's original specification three parts of sulphuric to one of nitric acid were used, and these were the very proportions subsequently introduced to photographers as a novelty and improvement.

Mr. Thomas asked if any mention were made in Mr. Spill's paper of the proportion of cotton immersed in the acid, as this was an important matter.

Mr. Spiller said there was not.

The Chairman announced that at the next meeting Mr. Henry Cooper would read a paper on the collodio-bromide process.

The proceedings then terminated.

Talk in the Studio.

Photography and the Eclipse Expedition.—Notwithstanding the Government grant of £2,000 and means of transit for the purpose of observing the forthcoming eclipse, it was found at the last moment that no funds were left to provide photographic assistance. One of the most eminent of our practical photographers was asked, about a week before the expedition started, to undertake the photographic duty with one of the observing parties, but was informed that not only would there be no remuneration, but that he must pay his own expenses in Spain, a free transit to that country being all that those in charge of the expedition could provide. The photographer in question was prepared to give his services as a labour of love, but he felt it due to his art not to accept the indignity involved in a position with the expedition at his own cost. To whom is this mismanagement due?

Photography and the War Victims.—An exhibition is open at the present moment, in the Architectural Gallery, Conduit Street, of the complete photographic works of Col. Stuart Wortley. The object of the exhibition is to afford opportunity for the sale of the works in aid of a fund for the relief of war victims, to which all the profits of the sales will be devoted. The magnificent collection of Col. Stuart Wortley's works at the Photographic Exhibition just closed, and that of last year, as well as the result of many previous years' devotion to photography, including some exceedingly charming pictures in Italy and the Mediterranean, are included in the exhibition, and are on sale in sets of sixteen at ten guineas and seven guineas, or in single pictures at fifteen shillings or half-a-guinea each, according to size. If the proceeds realized are sufficient to form a fund to relieve a special district of France, this will be done. If not, the amount will be paid over to one of the established War Victims Funds. This is a good opportunity for any of our readers desiring to possess copies of these charming pictures to obtain them, and serve a beneficent end at the same time.

Science in Paris.—Disaster and danger have not entirely repressed the progress of science in Paris. The *Academy des Sciences* continues to hold its sittings, which have not been interrupted by the circumstances of the siege. The chief subjects discussed are connected with æronautics and military science, and the *Comptes Rendus*, still issued regularly, contains full reports. M. Janssen, it is understood, will endeavour to join one of the eclipse expeditions, leaving Paris in a balloon constructed for him at the expense of Government. This zeal for science in the midst of such trials is at least a thing worthy of the French nation. The lectures of various scientific institutions in Paris are continued. Some of the journals devoted to science have been suspended for the present, amongst which are *Cosmos*, *Les Mondes*, *Bulletin* of the Photographic Society, and the *Moniteur de la Photographie*. We received a communication from M. Ernest Lacan, the editor of the latter, just before the investment, but have not heard of him since. We have not yet heard anything of the fate of the balloon *Niepce*, in which Monsieur Dagren and his photographic postal equipment left Paris.

A Photographer's War Fine.—It is stated that a fine of £1,000 (25,000f.) has just been inflicted on Dornach by the Prussians. This village is a suburb of Mulhouse, and as it is a somewhat poor and barren suburb, containing no inhabitants of importance but M. Braun, the photographer, and no important manufactory except his photographic establishment, probably, the largest in the world, it seems probable that the chief responsibility of the fine will fall on his shoulders. The ground for the fine was an alleged attempt to upset a train by some one near Dornach.

In Re Disderi and Co. (Limited).—Certain claims were made in connection with the liquidation of this company on Monday, before Vice-Chancellor Sir R. Malins. It appeared that the claimants, Messrs. Jocelyn, Browne, Boyle, Brownlow, and Hay, had been five of the eight directors of the above company, now in liquidation; and they claimed that the 25 shares for which they were each of them registered should be treated as fully paid up. The official liquidator, on the other hand, opposed the claim, giving the following version to the alleged payment. The claimants were nominees of M. Disderi, the promoter of the company, by whom they had, in fact, been placed upon the board of directors. By the articles of association no person could be a director who did not hold at least 25 shares in the company, and accordingly they had received from M. Disderi checks for £250 each, being the amount payable on 25 shares of £10. They then endorsed the checks to the secretary, in payment of their shares; and being thus qualified as directors, proceeded to negotiate on behalf of the company the purchase of M. Disderi's photographic business; the purchase money was fixed at £170,000, whereof £168,000 was to be in paid-up shares, and £2,000 in cash. The cash payment was at once made by the secretary handing back to M. Disderi his own eight checks for £250 each, and thus, the money being home again, the transaction was complete. Mr. Glasse, Q C., and Mr. Winterbotham, for the claimants, contended that the payment to the secretary by M. Disderi's checks was a good payment, and relieved the claimants from all further liability on their shares. Mr. Cotton, Q.C., and Mr. N. Higgins, for the official liquidator, argued that the whole operation was illusory, and that nothing had in fact been paid. The Vice-Chancellor adopted the latter view entirely, animadverting in strong terms upon the unbecoming nature of the transaction, which he characterized as a ridiculous farce, and the directors as M. Disderi's dummies.—*Times*.

A Lilliputian Newspaper.—We have received a rather curious specimen of French ingenuity—a copy of *Le Soir* of the 25th November, compressed, by means of photography, into a sheet measuring only three and a half by two and a half inches. This Lilliputian journal, nevertheless, presents the full contents of an ordinary full-sized number, and, with the aid of a good microscope, can be read easily. It is printed on one side only of the little sheet, and is headed with a notice that it must be read as a transparency,—that is, against the pane of a window, and with a magnifying glass. This reduction of a newspaper to a very small size is not new; it has been often done as a photographic curiosity; but it is the first time that we have seen its application to practical business purposes; for in this way *Le Soir* can be sent out by the balloons in immense quantities, without any curtailment of its usual contents.—*Daily News*.

Preparation of Ultramarine Test-Paper.—The great sensitiveness of artificially-made ultramarine for even very weak acids has been turned to account by applying that pigment to prepare a test-paper especially suited for the rapid detection of the presence of free acids in such salts as sulphate of alumina, alum, and other similar compounds. The ultramarine intended for this use should be that known commercially as No. 1; it should first be mixed with some water collected on a filter, and then thoroughly washed with some boiling distilled water, and afterwards incorporated with a mucilage made of 1 part of selected Irish moss, previously washed with cold water, boiled with about 30 parts of distilled water; the pigment thus obtained is uniformly painted over best filtering-paper, and, after drying, cut up into strips, as is usual for litmus-paper, and preserved in a glass-stoppered bottle. In order to test the ultramarine, it is necessary to prepare a perfectly neutral alum in the following manner. Alum of commerce, by preference potash alum, is dissolved in from 8 to 10 times its weight of boiling water, and this solution is poured into twice its bulk of alcohol at 80 per cent. The alum separated after complete cooling is collected, redissolved in boiling water, and the solution again poured into the same quantity of fresh alcohol of the same strength; the alum which separates on cooling is collected on a filter, and, after having been washed with alcohol, dissolved in water; a drop or two of this solution should not discolour the ultramarine, while its almost instantaneous discolouration should follow on its being touched with a drop or two of very dilute sulphuric acid, 1 part of strong acid to from 50 to 60 parts of distilled water.—*Chemical News*.

The Lesson of the Eclipse Photographs.—Mr. Proctor, writing in the *English Mechanic*, says:—"It would be difficult to point out a single result of the observations of 1860 by which new light was thrown on the nature of the prominences, had it not been that Father Secchi and Mr. De La Rue retrieved the credit of astronomy by their successful attempts to photograph the eclipsed sun. It is true that, so far as the main lesson drawn at the time from their photographs is concerned, our knowledge respecting the prominences was not increased. It was, indeed, interesting to note how exactly the views of thoughtful astronomers were borne out by the evidence which the photographs afforded respecting the fixity of the coloured prominences, not only during the continuance of totality, but during the ten minutes which elapsed while the shadow of the moon was travelling from Mr. De La Rue's station in the west of the Spanish Peninsula to Father Secchi's in the east. But the real value of the photographs consists in the evidence they afford respecting the structure of the prominences. Now, for the first time, astronomers recognized the complexity of these strange objects. The forms which, on a telescopic view (hastily made during a short interval snatched from other observations), had seemed simple, were now found to be strangely contorted and complicated. The protuberances, too, came now for the first time to be regarded as the more elevated portions of an envelope of rose-coloured matter, surrounding at least the larger portion of the solar surface. It is to this layer, whose existence had been suspected before by Grant and Swan, that Mr. Lockyer, in 1868 (unaware of its prior recognition), gave the name of the 'chromosphere.' All that astronomers had yet done was,—first, to learn that the prominences are solar appendages of a rose colour; and, secondly, to photograph these objects. It may seem, at first sight, that when we have said this we have said all; and, in particular, it may seem that the successful photographing of the prominences, however fortunate for science, as affording a record of their arrangement around the sun's disc, could teach nothing about their physical condition. But, as a matter of fact, the success of the photographic operations was full of meaning. Red light, pure and simple, will produce no photographic effect. If the light of the prominences had been as the light of the lithium flame, for instance, their brightness would have been wholly ineffectual to produce photographic impressions. Yet, again, if the light of the prominences had belonged to the red end of the spectrum, even though it had been continuous for that part part of the spectrum, no photographs could have been obtained. Lastly, if the light of the prominences had included all the colours of the spectrum, but with a marked preponderance of brightness as respects the red portion, though photographs might have been obtained, they would have been very faint indeed, since but a very small proportion of the light of the prominences could in that case have belonged to the part of the spectrum—the blue-violet—which is capable of producing photographic impressions. Hence nothing remains but that the light of the prominences is made up of definite parts from the blue as well as the red end of the spectrum; for in this way only can a sufficient proportion of their light have photographic power to account for the distinctness of the photographs taken by De La Rue and Secchi, while yet the colour of the prominences remains red to the eye. It would follow at once from this that the light of the prominences comes from glowing gas or gases."

To Correspondents.

Mr. James Harrison writes to complain of an American copy having been made of his "swivel headrest," that described and figured by Dr. Vogel in our last, in his articles on photography in America, being, he alleges, a precise copy of his; and he proceeds to point out that inventors, by generously forbearing to take patents for their inventions, are robbed of credit and profit by copyists. Without discussing the question of similarity, which may be, perhaps, less close than is imagined, Mr. Harrison surely forgets that if he had taken a patent in this country, it would not have protected him in America. Neither patent-right nor copyright are reciprocal between the two countries. The works of our best authors are scarcely issued in this country before cheap reprints are issued in America at probably one-tenth of the author's price; and so with all kinds of patent articles. Unpatented articles can scarcely hope to share better, and are copied at once on both sides, *if they are worth it.* If Mr. Harrison's headrest is copied, it is undoubtedly a tribute to its excellence; and since the copy will not be any more likely to sell in England than his would have been in America, he is, fortunately, not seriously injured. If a thing be really new, good, and worth patenting, it is better for the inventor, and better for the public, that it should be patented. If a thing be left unpatented, it is generally understood that it is either not worth patenting, or that the owner does not object to its use by others. It is difficult, in some cases, to draw the line as to where enterprize commends copying, and justice and good taste forbid it. For instance, M. Adam-Salomon introduced to his customers a certain style of portrait, with a certain mode of fitting and framing. People would smile if he complained of his style being copied. Such copying, together with the modifying, and the improvement generally involved in it, are the very basis of progress.

G. Taylor.—The mounts to which you refer are still to be had, we believe. Mr. Fox, of Little Britain, is the manufacturer. He will supply you with all particulars. 2. You might gain some of the advantages with a rectangular background fitted up in the same way; but one of the great advantages of the plan described is the possibility of wheeling the whole arrangement round the sitter to almost any extent without moving him, and still presenting a proper background.

T. E. W.—In no case should you have glass in the either end of your studio, as that will constitute a direct front light, which is always injurious. With this exception, there will be no difficulty in your employing Adam-Salomon's system in your room. And if you carefully study the matter, there is nothing conflicting in the instructions you quote. It is quite true that you should always have the dominant light from one source only; but you require subordinate light to give detail to the shadows, which may be either reflected light, or soft direct light. In a room with north light only, the south side being opaque, there is one dominant light, and the shadows are illuminated with reflected light. In M. Adam-Salomon's arrangement the wings are intended to control this. On the side where the dominant light is required, the wing will be open, whilst on the other side it will be arranged either to act as a reflector, or to transmit soft light. The light may come from any direction, but not all directions. In all schemes of lighting, there must be one dominant light. You have only to examine good pictures to see the direction from which the light has come. The glass in the north window being obscured will necessarily exclude a good deal of light, how much depends on the mode of obscuring. The only alteration we recommend is, to exclude light from both ends; do not remove the south glass, but provide it with good blinds to exclude direct sunshine. You have not too much light, and cannot afford to dispense with any side light. 2. Soak your waxed print in benzole, and then dry between sheets of clean blotting-paper, repeating the process several times, each time with fresh benzole and fresh blotting-paper.

South Devon asks if Mr. Tudor Williams is an amateur, and if he will kindly publish the details of the coffee process as he works it in producing the charming landscape we recently noticed.

G. T.—Yes; we believe both of Mr. York, 87, Lancaster Road, Notting Hill, who will send you a list on application.

J. W. D. K.—Thanks. In speaking of developing out of doors, do you mean for landscape work, or for prison portraiture? If for the latter, you will find it more convenient to get one of the cells. If for landscape work, one of the field tents we have described will best answer your purpose.

T.—The Woodbury water-marks are produced by submitting paper to heavy pressure in contact with a gelatine relief such as Mr. Woodbury uses in producing his metal plates, described in the various articles on the process.

An Anxious Printer.—The yellowness in the whites is due to sulphur, but at what stage the action may have taken place is not easy to state certainly. If the toning bath were acid, and the print were placed in the hypo without washing, the print would become yellow. Anything which communicated acidity to the hypo bath would cause yellowness, and the print remaining in the fixing bath too long would have a similar tendency. Sometimes traces of hypo getting into washing water from fingers, or dust in the atmosphere, will cause yellowness. The combustion of gas in a printing room would be injurious, unless the products of combustion were well carried off by means of a flue. In extremely cold weather it is desirable to use warm water in making the fixing bath, so as to use it at a temperature not lower than 60°, as extreme cold is very unfavourable to perfect fixation.

T. G.—Many thanks. We have not seen the enamelled slides you mention, but will endeavour to do so and let you know.

J. F. N.—The mere purchase of copyright negatives would not make you the owner of the copyrights. All copyrights must be transferred by a memorandum in writing, which must be duly registered at Stationers' Hall. Until that is done, any proceedings must be taken by the registered owner of the copyrights.

W. W.—We know of no objection, nor of any injurious result from its use. The use of plain uniodized collodion for preliminary coating would be difficult, because the first film would dissolve on applying the second, and no mode of preparing the collodion would prevent such solution. 2. Chloride of calcium, being very greedy of moisture, soon gets damp. In the instruction to which you refer it is stated that it is to be dried, but not fused; that is, the moisture has to be expelled by heat, but not sufficient heat to fuse it. That you have will, doubtless, answer your purpose.

W. R. P.—There is no work that we know of devoted to the subject of copying oil paintings, but the subject has been treated in various articles in the back volumes of the Photographic News. The chief conditions are good light and lens, a full bromized collodion, sufficient exposure, and iron development. If you have not access to the volumes of the News, we will endeavour to refer you to the numbers containing articles.

W. Jeffrey.—Many thanks. The prints are capital, and full of interest.

R. H. P.—Thanks.

A. J. Fisher.—Thanks. We shall make use of the "ideas."

J. W. Pickering.—Received. Thanks.

J. J. R.—It is important in retouching to use suitable tints to avoid the opacity of which you speak. Payne's grey or cobalt will answer. The article in the News and that in the Year-Book give similar information.

M. J. S.—To clean Daguerreotypes, first wash with water, or, if necessary, alcohol, and then water, until water flows freely over the surface, then apply a weak solution of cyanide, from five to ten grains per ounce, until the stains, &c., are removed. You will find a full article on the subject in our forthcoming Year-Book, and there have been articles recently in the News giving instructions.

M. Dea.—Received; but your letter contains no address.

Finem Respice.—In the Year-Book for 1868 you will find a very simple process, by Dr. Anthony, for producing transparencies. That or the Fothergill is the simplest dry method by development. Without development, the collodio-chloride; but you require better light. With care, it is not difficult to print by superposition with wet collodion. Camera printing by wet collodion is also a very simple plan. Opal glass pictures can be examined by transmitted light, but the opal excludes more light than the finely ground glass.

W. D.—It seems probable that your bath had become contaminated with organic matter before evaporation. You may either get rid of it by the permanganate of potash treatment before evaporation, or possibly you may find fusing the dried crystals will get rid of the evil. As a rule, however, evaporating a bath is not a safe means of purification, as it necessarily acquires contamination in use, which is not necessarily got rid of by evaporation.

F. G. Eliot.—Received. Thanks.

R. H.—You can obtain the photographs you require of Mr. York, 87, Lancaster Road, Notting Hill. The Photographic News is supplied direct from the office at 15*s.* 2*d.* per annum, or 3*s.* 10*d.* per quarter, payable in advance.

J. Powell.—The plan seems good. Is your letter for publication?

X. Y. Z.—You can register at the Office for Registration of Designs; but if it merely consist in a special mode of arranging or "displaying" the printing, it is doubtful whether such a thing can be protected. The report referred to has not arrived.

James Hall.—Thanks.

C. J. F.—Thanks.

B. Wyles.—Thanks.

E. McDonall.—Thanks. We will use the information if necessary.

J. Cunnington.—Too late for insertion in this number. In our next.

Several Correspondents in our next.

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CONTENTS.

PAGE
Solubility and Purification of Pyroxyline ... 601
M. Grasshoff on the Albert and Woodbury Processes ... 602
Foreign Miscellanea ... 602
American Correspondence ... 603
On the Splitting of Varnished Films: its Cause and Prevention. By H. Kruger ... 604
On the Reproduction of Faded Prints by the Collodio-chloride Process. By H. Baden Pritchard ... 605
Is it Possible to Obtain Photographs in Colours? By R. W. Thomas, F.C.S. ... 606

PAGE
On Glass Transparencies. By Arthur Coventry ... 607
On Xylonite, a Material Applicable to Photographic Purposes. By Daniel Spill ... 608
Photography in America. By Dr. Vogel ... 609
Correspondence.—Combination Printing Frames—Packing at the Exhibition—Yellow Spots on Prints—A New Cement—Dissolving Views with One Lantern ... 610
Proceedings of Societies.—Manchester Photographic Society ... 611
Talk in the Studio ... 611
To Correspondents ... 612

SOLUBILITY AND PURIFICATION OF PYROXYLINE.

Some months ago, as our readers may remember, M. Camuzet called the attention of the French Society to the curious fact that pyroxyline was soluble in some degree in water, or, at least, that some constituent of the pyroxyline was so soluble, the proportion being in some instances fifty per cent. or more. M. Camuzet demonstrated this by diluting plain collodion with five to ten times its quantity of water, when part of the cotton would be precipitated, while another part remained dissolved. This test was not considered altogether satisfactory, as the cotton remaining in solution was really in a mixture of alcohol and water, and not water simply. Herr Joester, of Vienna, who was one of those who did not regard the experiments as quite trustworthy, has recently reinvestigated the subject, and finds the portion which remains dissolved is smaller in proportion to the quantity of water used in diluting the collodion. When fifty times the quantity of water is employed, nearly all the originally employed cotton will be precipitated. In other words, the more nearly the mixture of alcohol and water approaches to water only, the smaller the proportion of pyroxyline it retains in solution. The experiments of M. Camuzet have, however, suggested a practical application of the tacts to our friend Dr. Vogel, who says, "I have repeated these experiments, and have come to the conclusion that the cotton precipitated by diluting plain collodion with water is much purer than the original article. We know from experience that very often homœopathic quantities of foreign bodies in the silver bath, or in the collodion, are sufficient to make them useless. Such substances, even in the smallest quantities, as nitro-glucose, nitro-mannite, are side-products in the manufacture of gun-cotton. By precipitating plain collodion with water these foreign bodies are dissolved, and can be removed by washing; and the washed precipitate gives, when dried and redissolved in alcohol and ether, a collodion which shows, on being mixed with the salts of iodine, peculiarities, it turning yellow at once, while other collodion remains white, and only turns yellow, and finally red, after some lapse of time. The former retains its original yellow colour unchanged. I am still experimenting on this interesting subject, and shall send you further information in the future."

The experiments recall some of a similar nature made by M. de la Haye, about thirteen years ago. He stated that on dissolving four per cent. of good gun-cotton in ether of ·847 specific gravity, and then leaving it to repose for three weeks, it was found to have divided itself into three strata of different densities, and possessing different qualities. The upper layer was clear and limpid, like albumen; the next layer thick and glutinous; and the lowest of partially dissolved and undissolved cotton, mixed with various impurities. The two upper portions of fluid, M. de la Haye states, "must be poured off carefully, and one per cent. of pyroxyline added, when a rather curious phenomenon presents itself. The ether, finding new gun-cotton to dissolve, abandons such fibres as it had only swelled and held in suspension; hence it results that the precipitate of this second operation is proportionately greater than in the first, and slightly different in its nature, being more dense and felt-like. It is probable that among these fibres a portion may be changing to oxalic acid, or, at all events, have commenced this transformation. It is of ether by ten of water, or to a certain combination of the two bodies, there is the fact, and the first hypothesis is the simplest explanation of it, though it does not quite account for the increase of density being considerably more than a tenth. A second phenomenon is also worthy of notice: the layer of water is acid, while the collodion is absolutely neutral; the water evidently deprives the collodion of its soluble salts, and drags all the remaining impurities to the bottom. The water gives to the ether a perfect neutrality, and relieves it of the acetic and nitric acids, &c., which it may certain, however, that, under the influence of various circumstances, the deposits of old collodion, being greatly concentrated, when treated with potash, yield perfectly defined crystals of oxalate of potash. After standing fifteen days the fluid must be decanted, and mixed with a certain quantity of distilled water to wash the collodion. The mixture must be long and well shaken, and then left to subside for a month or six weeks. Two layers are formed, and a singular fact presents itself: the collodion is thicker than before. This may be due to the absorption of one part contain, and imparts to it new qualities. Collodion prepared in this manner, if allowed to stand for six months, acquires a wonderful limpidity, and forms no deposit. Age perfects it. It would seem as if the pure elements of which it is composed united together more intimately."

That a method of purifying pyroxyline from soluble impurities would be a great boon to the photographer there can be no doubt. Unfortunately the plan of M. de la Haye was complex, troublesome, and costly, and was not, on repetition, found to be certain. If a plan simple and inexpensive can be devised it will prove a valuable gain. To the presence of impurities in the collodion many of the troubles of the nitrate bath are doubtless due; pin-holes, for example, arising, in some perplexing cases, as we have before pointed out, from the presence of oxalate of silver in the bath, derived from the collodion which has been excited therein.

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M. GRASSHOFF ON THE ALBERT AND WOODBURY PROCESSES.

Some few months back M. Grasshoff visited the Albert printing establishment at Munich, as also the house of Messrs. Goupil and Co., at Asnières, where Woodburytype was being extensively carried on. M. Grasshoff gives the following account of his visits, and the result of his impressions, in the *Photographische Mittheilungen.* He says:

"What I saw at M. Albert's pleased me very much, and I must here repeat that I was received by that gentleman in the most friendly manner, and conducted through the whole of the establishment without reserve. In the printing room he asked me to select any block I wished out of about two hundred, from which copies should be printed in my presence. This invitation I eagerly accepted, and watched with wonder and curiosity the whole process. The printing was conducted very rapidly, and, within the space of ten minutes, the assistant had produced five examples on dry engraving paper of different thicknesses, all of which left nothing to be desired on the score of beauty.

"The different presses in the room were busily engaged in printing off impressions of a very perfect character, hundreds of prints being produced from each block, some of them, indeed, having, according to the printer, already given off 2,000 copies without suffering any appreciable injury."

M. Grasshoff's account of the Asnières establishment is equally hopeful; he states that at the time MM. Goupil and Co. commenced to work the process the same was not in its present perfect state, and many difficulties had to be overcome to work the method smoothly and practically. As is now the case, M. Grasshoff thinks the Woodbury method a somewhat complicated and difficult one, but, at the same time, testifies to the very fine character of the results. While Albert uses a cheap and ordinary paper for printing, Woodbury requires the same to be specially prepared. The number of prints produced by six presses at Goupil's is about two hundred per diem, while at Albert's establishment the same number is obtained in the same time from one press.

The Albert prints are, moreover, at once in a finished condition, while the Woodbury pictures, of which the largest measure but twelve inches in length, required to be passed through the operations of drying, tanning, re-drying, clipping, mounting, retouching, and pressing.

Finally, says M. Grasshoff, the establishment of an efficient printing system in the one case is much more costly than in the other, for, according to M. Rousselon (the manager of the works of MM. Goupil and Co.), the expense of fitting up the Woodbury apparatus, &c., would amount to £3,500, whereas, in the case of the Albert process, not much more than £700 need be expended. He is perfectly satisfied of the importance of both methods, and thinks photographers should give the same their fullest attention.

Each process he believes to be endowed with special qualifications, and has its own particular supporters.

Foreign Miscellanea.

It is very gratifying to hear of the successful employment of the ingenious method of reducing printed matter by means of micro-photography, which for many years back has simply served to afford amusement and wonder at popular gatherings in the shape of minute copies of bank-notes and the Lord's Prayer. Copies of the *Figaro* and other Parisian newspapers have been taken within the dimensions of a square inch upon glass, or other transparent mediums, and these, on being received from the beleaguered metropolis, either by carrier pigeons or otherwise, are at once placed in an enlarging apparatus and amplified to their original size. The printed matter is of course, in the first instance, produced in a distinct and legible type, suited for reproduction in the miniature camera, so that no very great difficulty is afterwards encountered in the process. The same plan would be a good one for conveying field despatches through an enemy's country, as the instructions would be contained in so small a compass as easily to escape recognition or capture, and the possession of a small microscope by the general receiving the dispatch would enable him at once to read its contents.

M. Fritz Luckhardt, the celebrated Viennese photographer, has recently built a new studio, in which, however, there is little of novelty; a description and plan of the building appears in the November number of the *Photographische Correspondenz.*

The Photographic Exhibition at Cassel seems to have been well attended, notwithstanding the fact that the Franco-German war is just now an all-absorbent topic in Central Germany. No medals seem to have been awarded, but there have been three classes of honourable mention. Albert of Munich, Borntrager of Wiesbaden, Grote of Berlin, and Fritz Luckhardt of Vienna, are among those who have most distinguished themselves. No English or French photographers seem to have sent in pictures

M. Fritz Haugk, of Brunswick, claims the honour of having been the first to suggest the use of washed and fumed albuminised paper, having first published the details of the plan in the *Photographische Zeitung.* While in the employ of M. Baden, of Altona, M. Haugk states that he prepared paper for printing in this manner, and this was indeed the first time of the same ever being practically employed.

The influence of the siege of Paris is being acutely felt by the scientific bodies of France. Many gentlemen fled from Paris before its investment, among whom are the MM. Becquerel père and fils, and several members of the Institute. Unfortunately M. Janssen, whose solar observations were made contemporaneously with those of Mr. Norman Lockyer, and whose experience would just now be of importance during the coming eclipse, remained an inmate in Paris; and, as all exertions made on his behalf by foreign governments to obtain his release from the beleaguered metropolis, for the purpose of assisting in the expeditions, proved altogether fruitless, M. Janssen had no alternative but to trust himself in a balloon, so as to be at his post in time. We have not yet heard of his arrival at any one of the points of observation, but it is to be hoped that he may turn up in time to be of use to his brother investigators.

Some dry plates sent out with the last Polar expedition have been lately returned to M. Harnecker, who prepared them in the first instance, to be developed. They were exposed by an amateur belonging to the exploring party, and remained undeveloped until the actual return of the expedition. The results on development are said to have exceeded the most sanguine expectations.

Many photographic articles of Parisian manufacture have already reached high prices in Germany, and exertions are about to be made in Berlin to fabricate there such wares as have hitherto been Parisian specialties.

The attention of the public has been called to the circulation of sham photographs on the Continent, in the shape of ordinary woodcuts or lithographs produced upon glazed or albuminized paper, and mounted on cartes-de-visite, to appear like photographic results.

M. Petsch, of the well-known firm of Loescher and Petsch, of Berlin, who was a soldier before Metz, was fortunately away from the main body of troops on a foraging expedition, on the occasion of the final serious attempt at a sortie made by the French when so many of the German division were placed *hors de combat.* M. Petsch has since returned to Germany in charge of prisoners.

M. Martin has called attention to the value of the Monckhoven artificial light for the purposes of micro-photography. He also states that a microscope of a superior description should be invariably used, as ordinary lenses are apt to give inferior and blurred pictures.

Opal glass, or rather glass faced with enamel, is said to be easily produced by treating the surface of a glass plate with sulphate of baryta and silicate of potash, or soluble glass; the compound is allowed to remain for several days, when it will be found to have formed, with the separated silicic acid, a hardened mass, unaffected by the action of hot water. On subjecting the plate to a high fusing temperature, a coating of beautiful white enamel is obtained.

Dr. Liesegang confirms the excellent working properties of the platinum toning bath proposed by Mr. Wharton Simpson. The doctor uses one part of chloride of platinum in 1,300 parts of water, neutralising the liquid by means of a saturated solution of bicarbonate of soda, and adding acetic acid until an acid reaction is perceptible. Collodion positives developed with iron, and fixed with cyanide of potassium, are at once brought into the toning solution without previous drying; their light grey colour is soon changed into a dirty grey tint, and, subsequently, into a deep lustreless black, of great intensity. The high lights always remain clear, no matter how long the proof remains in the bath.

In a letter from Vienna M. Alois Nigg tells of a photographer in that town, a M. Gantsch, who prepares a paper so sensitive that a developable picture may be produced thereon, by means of an ordinary gas flame, with an exposure of six minutes. The mode of sensitizing is a secret, but M. Nigg assures us of the authenticity thereof.

It is said that at the close of the present year M. Ludwig Schrank will resign his appointment as secretary to the Vienna Photographic Society, and at the same time give up the post of editor to the *Correspondenz*, offices which that gentleman has held, we believe, for upwards of ten years.

A sugar developer containing sulphate of copper, which some time since was strongly recommended, is, according to M. Kardacz, of very little service, and is, indeed, of less value in ordinary working than the usual iron developer.

A means of bleaching ivory which may be of service to photographers is given in *Licht*. The articles, fashioned from ivory, are placed in a glass or porcelain vessel containing 227 grammes of crystallised soda dissolved in 907 grammes of water. After sojourning therein for a couple of days they are withdrawn from the bath, well washed, and then placed for five or six days in a mixture of 340 grammes of sulphate of soda, 906 grammes of water. At the expiration of the period named, 28 grammes of muriatic acid is added, diluted in the first instance with 112 grammes of water, the vessel containing the ivory articles being covered up carefully for a further period of 24 or 36 hours. Finally the ivory is washed thoroughly, and dried. As much as 453 grammes of ivory may be bleached with the amounts of liquid above specified.

AMERICAN CORRESPONDENCE.

A Curious Cause of Distortion.—"Simpsontypes," or Pictures on Porcelain Glass—On Backing Plates.

A Curious Cause of Distortion.—A good deal has been said and written lately upon the subject of distortion, by our mutual friend, Dr. Vogel, and others, and some very valuable hints have been given us. Yet the ground has not been covered. My attention was called to another cause a few days ago by Mr. H. J. Baker, of Buffalo, a gentleman noted for his excellent work, and his careful study in matters pertaining to our art, which, although an everyday occurrence, has, perhaps, been as often overlooked.

Here are two pictures which I enclose, and which explain all. You see they are plain photographs, so distortion cannot be caused by the grading of the shades in retouching. Neither is the use of a side light for one, and an entire top light for the other, the cause, for they are, as you see, lighted precisely alike. Again, the same lens was used for both, so that the use of lenses of different focal length causes no distortion or difference in the figure. "What, then, is the explanation of this riddle?" the reader enquires. Allow me to quote now from Mr. Baker's letter, which will clear up the mystery.

"At first glance you will say that they are prints from one negative. Look closer, and you will conclude that it is impossible. They are of the same person, that is clear, but one face is smaller and narrower than the other, and this contraction is seen all over the print. The shadows, too, in the smallest face, are a trifle the most intense, and the lights sharper, though the general depth of printing is, as near as can be, alike. Actual measurement proves that the two heads are not the same in size. Now, when I say that these are two prints, made the same day, and on parts of the same sheet of paper, from the same negative, washed, toned, fixed, and washed again alike, you will see that there is a conundrum somewhere.

"Some have guessed that one print was made in the shade, and the other in the sun. No; and there all conjecture ended. Well, the cause is simply a different method of mounting. One print was mounted in the usual way, damp; that is the large head. The other was pasted, laid aside, and dried; then the card was damped, the dried pasted surface laid on it, and passed under the roll; this is the narrow head, with the deep shades and sharp lights.

"Now you will immediately think of how paper expands when damp, and conclude that the dry mounted one must be the correct size. Not so, again; and comparative measurement with the negative shows that either head coincides with the impression on glass; indeed, the dry mounted print has contracted much more than the other has expanded. The print mounted in the customary way is the nearest right (assuming the negative to be truth).

"Observe that the expansion and contraction are not equally proportioned to all dimensions of the head, being both much greater in proportion to the breadth of the face than to its length, so that either print is distorted, which, in the case of an equal mobility of the parts of the paper, would not be; the paper contracts and expands nearly three times as much across the narrow way of the sheet as in its length. This is an important, constantly present, and, it seems to me, unavoidable, cause of photographic distortion. Let both of these heads be magnified to life size, in length, from the outer right-hand corner of the mouth to the inner corner of the right eye, 2¼ inches, and the divergence in width would become comparatively enormous. Let now the head be carefully traced by the hand, following the solar camera image of the negative, and a third scale of dimensions is produced. Print from the negative, in a solar camera, with the length of the paper placed across the width of the face, then another print, with paper placed with its length parallel to the length of the face, and you have a fourth and fifth scale; under all conceivable conditions this cause of distortion remains.

"So, then, photography, usually conceived of as being perfectly literal and true, is found in many ways to be inexact, and here, as in other studies, the conviction is forced upon us that man has not absolute truth, only adumbrations thereof. In several instances this property of the paper has proved quite vexatious to me, where absolutely correct copies were wanted for mathematical purposes. A plan that was to be just 11 inches long, and was so on the negative, came out about 11½ inches on the mounted proof. A medallion which was to be copied to a certain oval, the pattern of which was furnished, was carefully prepared on the negative, but the oval on the finished print was swelled in the width out of all proportion; so much so, that the maker of the marble would not believe it possible that the negative had been properly treated, until it was shown him, and he laid the pattern on it himself.

"Yet we may comfort ourselves, that in the case of portraiture it must be a wonderfully accurate eye that could detect the variations as compared with the living model, and even then, it would be a decided hypercriticism to find fault with drawing; that is, if necessarily somewhat at fault, yet far more accurate than handwork.

"What is stated above may be useful to those who have to reproduce photographs of exact sizes, for in such cases allowance must be made for the distortion described."

Simpsontypes, or pictures on porcelain glass.—In the parcel of American pictures sent you for your exhibition, I hastily put a few pictures on porcelain glass, and I should have said at the same time that they were by no means the best that are made here by the collodio-chloride process *given* us by our good friend the editor of the Photographic News, whose name these pictures very properly and rightly bear. Some exquisite results are produced by this process, and some of them on plates as large as 16 by 20, yet there are very many indifferent and very poor ones made too. The common mistake seems to be in forgetting one or two very essential points—namely, that pictures on porcelain glass need to be printed much more deeply than paper prints, and that great care is necessary lest they be toned too quickly and too much. Neglect of these specialities has caused many a photographer to give up making them in despair, and to employ his more successful neighbour to make them for him. As these pictures are very popular here, and find a ready sale, it will not be out of place to give you more details concerning the method generally adopted here for their production.

The greatest of care is necessary in cleaning the plates, and in giving them the preliminary coating of albumen.

The collodio-chloride is made as follows :—

No. 1.—*Plain Collodion.*

Alcohol and ether (each) ...	5 ounces
Cotton	60 grains

No. 2.—*Nitrate Solution.*

Nitrate of silver...	2 drachms
Distilled water	2 ,,

No. 3.—*Chloride Solution.*

Chloride of strontium	64 grains
Alcohol	2 ounces

No. 4.—*Acid Solution.*

Tartaric acid	64 grains
Alcohol	2 ounces

Sensitive Collodion.

Plain collodion	2 ounces
No. 2 solution (in 1 drachm alcohol)	30 minims
No. 3 solution	1 drachm
No. 4 solution	30 minims

Add the ingredients in rotation. No. 3 should be added gradually, shaking the mixture after each addition. Ready for use half an hour after mixing. The keeping qualities are not good, and it *is best* to mix as you want for present use. This is not essential if the mixture be kept from the light, but better results are obtained when the collodio-chloride is fresh.

Over-print, as I have before said, and tone in a weak solution. Here we generally use an exhausted toning solution that has been used for paper prints. It is a good plan to withdraw the print once before it begins to assume a purple tone. Fix in a solution of water seven ounces to one ounce of hypo. Fix five or six minutes, wash *very* thoroughly, flush with a common salt solution, wash again, drain, and finally dry. I need not say that no development is needed after printing. All the printing is done in the frame, which brings negative and porcelain plate into close contact. We use Sarony's development process when enlarging, and find it very efficient.

On Backing Plates.—The disagreeable operation of backing dry plates, and the necessity of being compelled to do it, is a great drawback and a great hindrance to success, causing many to lose their patience, and finally to give up in despair. Mr. Lea's remarks in the News a few weeks ago gave us partial relief, and I now add a few remarks from Jno. M. Blake, Esq., an experienced dry-plate worker, which may give further light on the subject :—

"Shellac varnish," he says, "coloured with lampblack, has some advantages when used as a backing for plates to prevent blurring. It is not convenient in all cases; but the fact that plates can be before sensitizing, and, when wanted, can be immersed in the silver bath for the usual length of time without detaching the varnish or appreciably injuring the solution, makes the plan convenient on many occasions when an efficient preventive of blurring is required, and the hurry in the preparation of the plate before exposure, would otherwise lead to neglect of the necessary precaution. A few plates thus backed can be carried, when viewing, for such subjects as require their use to secure the best results. The development has to be judged by reflected light. The plate can of course be redeveloped after fixing and removing the varnish. This removal is more readily accomplished after considerable soaking; but if allowed to dry again, the varnish becomes as firmly attached as before. Removal by alcohol is a slow operation. A more efficient means is to pour a little liquor ammonia upon a glass plate, and then lay the negative upon it, back down. One minute's action of strong ammonia, provided it comes in contact with every part, will cause the varnish to wash off readily, often in a single piece.

"In preparing dry plates, if we have dried a batch of plates and wish then to apply the backing, the shellac mixture will dry quickly, so that the plates can be packed for use, and for this reason it may be preferable to any mixture containing water. If we would have dry plate films perfectly uniform in development, it seems necessary to back the plates after drying; for if the fingers are allowed to touch the edges of the plate on the film side, just after the preservative has been applied, the oily matter which comes from them, however long the hands may have been soaking in water, causes the preservative to retreat and thin out upon the plate for half an inch or more around the point of contact, and this irregularity remains after drying. To avoid this, coat the plates held on a pneumatic holder, and tranfer to the drying-rack without contact with the fingers.

"Before developing a dry plate backed with varnish, scrape off more or less of the latter with a knife, so that the density of the plate can be seen by transmitted light; next wash, if a gum plate, pouring from some height, to dislodge dust that may have scattered on the film side while scraping the back. It is usually a matter of no difficulty to remove the backing that remains after the plate has been fixed and soaked.

"Whatever backing is employed on plates, wet or dry, the object will not be attained unless the substance remains in perfect contact with the glass after drying. If it separates, we have the same amount of light reflected from the back surface of the glass as before the backing was applied, and, in addition to this, that from the material used, which may retain a bright reflecting surface on separation from the glass. A proper proportion of glycerine or sugar will prevent separation in mixtures containing water. It is necessary to have a sufficient amount of shellac varnish for a given amount of lampblack to secure adhesion. The varnish is to be applied with a brush, and must retain the same bright appearance when viewed down through the glass after drying, that it had when first applied. If this is not the case, and it has a whitish look, add more shellac varnish. A sample of lampblack should be obtained that has been heated, to decompose resinous matter. This it retains in the crude state, and it can be detected by the smell."

When wet blotting-paper is used on the back of a plate it is an object to exclude all air-bubbles from between it and the glass, for the reason given above. The most perfect backing would be some varnish, having the same reflective power as the glass, and of some non-actinic colour, and containing no solid particles, for such will reflect a certain amount of light, whatever their colour. But except, perhaps, with the most severe tests, where the solar image itself is included, nothing more effective can be desired than the shellac described above.—Very truly yours,

Edward L. Wilson.

Philadelphia, December 1st, 1870.

ON THE SPLITTING OF VARNISHED FILMS; ITS CAUSE AND PREVENTION.

BY H. KRUGER, OF SCHWERIN.*

In the recent report of the Berlin Commission on negative varnishes (see Photographic News, page 522), it appears to me that the subject of splitting of the film has not been sufficiently taken into consideration. For this reason I have resolved to publish the following remarks, in the hope, or rather in the certainty, that they will lead to a termination of this much-vexed subject, by making known a means by which a negative may be efficiently protected. Although it was not until after many unsuccessful efforts that I was at last guided to my present method of operating, still I cannot overcome my astonishment at the fact that no other photographer besides myself should have discovered or published it, inasmuch as the agent used would seem to present itself at once to the mind of any practical operator.

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* *Licht.*

The entire solution of the problem is contained in the word "castor oil;" for the sole cause of the splitting lies in the brittleness of the gum employed in the varnish, a quality which, although at the commencement, perhaps, unimportant, is so increased by the effect of the atmosphere, that all cohesion is removed when, after the lapse of some time the contraction of the film commences. To prevent this brittleness, and give increased toughness to the film, it has been customary to employ some compound or another, although, hitherto, unfortunately, always the wrong ones. Turpentine, for instance, dries up altogether, and leaves behind a resin, more hard and brittle even than gum and sandrac; and camphor, oil of lavender, and other materials, evaporate altogether, and are, therefore, valueless. Castor oil, on the contrary, never dries, and any gum or resin to which it has been added remains unchanged, and does not give rise to splitting or fracturing.

During the course of the present summer I have exposed plates coated with a varnish containing castor oil for weeks together to the influence of sun and rain during day and night, and in not one instance have I discovered any change in the surface of them; the negatives were, of course, placed with their faces against the wall, and subject to every variation of a damp atmosphere. All other addenda to the varnish should be avoided, with the exception of the castor oil in question; thus, for instance, in order to prepare a varnish with sandrac, we take of the gum, one ounce, and dissolve the same in eight ounces of alcohol, adding to the solution, as soon as filtered, about eighty grains of castor oil The varnish prepared in this manner meets every contingency, being especially suited to retouching, from the fact that the tough, smeary nature of the castor oil, renders the film better capable of being worked upon with the pencil; so well, indeed, is the surface fitted for working upon, that I but very seldom have recourse to the employment of cuttle-fish powder for roughening the film.

It should be mentioned that the amount of castor oil to be added to the varnish is governed entirely by the nature of the gum used in the preparation of the latter, the quantity of oil being lessened or increased accordingly; the amount of alcohol employed for dissolving the gum need not be altered.

ON THE REPRODUCTION OF FADED PRINTS BY THE COLLODIO-CHLORIDE PROCESS.

BY H. BADEN PRITCHARD.*

In bringing before your notice this evening the results of some operations recently conducted in the Photographic Establishment at Woolwich, I would point out that my remarks do not bear reference to any novel or improved method of working, but are made simply for the purpose of demonstrating the success which has attended an effort to reproduce certain rare and valuable silver prints by the combination of some well-known manipulations.

The impressions in question were bleached and faded in the highest degree, and had apparently lost much of their finer detail, having been produced some fifteen years ago, when our photographic printing processes were less carefully conducted than at the present moment. They were all representations of scenes in the Crimea—the Malakoff, the Redan, Sebastopol, &c.—from negatives by Robertson, Roger Fenton, and others, kindly given me by Mr. J. E. Mayall, of Brighton, in whose possession they had remained for many years. The negatives have for the most part disappeared, and their value and utility being considerable, from a military point of view, it was decided to attempt the re-development, or reproduction, of the prints before the last traces of them had vanished—a contingency which seemed likely very soon to come to pass. After some preliminary essays to intensify, or, rather, redevelop the pictures, and also to obtain diapositives in the camera—a method which failed from the lack of vigour in the originals, and consequent difficulty in focussing—I finally resorted to the collodio-chloride process for the purpose of reproducing the prints by direct contact.

My experience of the collodio-chloride process has now extended over a considerable period, some of my preliminary experiments in connexion with it being published in the *Photographic Journal* of January last, where attention is directed to the suitability of collodion prepared with chloride of calcium for the preparation of negatives from diapositives. Collodio-chloride of this description gives a brown, opaque, non-actinic film, which, if submitted to the action of ammonia vapour previously to printing, darkens sufficiently to yield vigorous and brilliant impressions. The chlorides of magnesium and strontium, which were tried at the same time, did not impart sufficient intensity to the film to render the latter suitable for contact printing, and, therefore, while no doubt of value in other directions, were to be avoided for this particular purpose.

Subsequently I employed also the collodio-chloride manufactured by Messrs. Mawson and Swan; the rosy tint of this on printing proclaimed at once the presence therein of chloride of lithium—a circumstance corroborated by spectroscopic observation, when the red lithium line near that of sodium, as also the barium line, were to be seen very distinctly. The collodion was already mixed ready for use when received, and kept good in this condition for six months, yielding results fully equal to those obtained by fresh samples of home preparation. But the great drawback in the employment of all these collodions is to be found in the deliquescent nature of the salts employed—calcium, strontium, lithium, magnesium, erring alike in this respect. Indeed, it is from the very fact of their being deliquescent, or readily soluble in water or alcohol, that they have been chosen for admixture with the collodions, the film of which requires careful watching during the process of printing, to prevent the absorption of moisture. Dr. van Monckhoven has, it is said, lately employed the neutral hydrochlorate of cinchonine with some success in the preparation of collodio-chloride. This salt, while readily dissolving, even in absolute alcohol, is at the same time non-deliquescent.

The proper conditions necessary to fearless manipulation, supposing the tint produced to be a favourable one, would thus be secured by using the organic hydrochlorate in question; but, in the meantime, a few precautionary words on the use of collodio-chlorides prepared with deliquescent salts may be of interest.

To proceed, then. The faded prints, in regard to which it was difficult to decide whether they had been produced upon albuminized or plain paper, so advanced was the state of decay, were in the first instance thoroughly impregnated with wax (paraffin and stearine having been found to give a lesser degree of transparency). This operation was accomplished in the ordinary manner, care being taken to remove all superfluous wax by hot-ironing, and subsequently to rub the surface vigorously with a tuft of cotton wool. The waxing of the prints alone sufficed to deepen the contrast in the pictures; for whereas the yellowish whites were thus rendered more transparent, the half tones and the shadows still retained their brown opaque character, and minor details, which previously were quite invisible upon the surface, became apparent.

The collodio-chloride was applied to a glass plate, coated, in the first instance, with a dilute aqueous solution of albumen, and dried, and, when the collodion had set perfectly, it was placed before a clear fire, so as to become rapidly and thoroughly desiccated. The operation of fuming was then proceeded with, the stopper from a bottle containing strong liquid ammonia being simply removed, and the plate brought, part by part, over the orifice, until the bright varnished appearance of the film had become dulled and matt. This change in the aspect of the surface, which is brought about after the lapse of two or three minutes, indicates the completion of the process, and the plate, being again warmed, is placed in the printing-frame upon the waxed positive, and the pad adjusted in the ordinary manner. Too much attention cannot be given in regard to the exclusion of moisture in this operation. The fuming should take place in a dry, warm room, the pad and frames must be perfectly free from damp, and the printing operation itself is more safely conducted in a locality where a condensation of moisture need not be feared. If these precautions are not taken, and any damp should happen to penetrate to the negative, the formation of spots and stains upon the positive, as likewise upon the collodio-chloride image itself, is unavoidable, and a rare and valuable print may be in this way utterly destroyed. Washing and rubbing of the transparency may be successful in freeing the same from the silver salts adhering to it, but only if their reduction by light has not actually commenced.

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* Read before the Photographic Society.

It will thus be seen to be very desirable indeed that a collodion compound of this kind should be prepared with a non-deliquescent chloride, and we sincerely trust that Dr. van Monckhoven's efforts to adopt the cinchonine salt for the purpose will be successful.

In producing collodio-chloride pictures it has been stated to be almost impossible to overprint. This is perhaps going too far; but, nevertheless, a film of collodion may be printed very deeply indeed without detriment, especially when the same requires to be toned, in which operation a very great deal of the density is lost.

In the present instance no toning whatever is necessary, but development, or rather intensification, is resorted to for the attainment of greater vigour. After flowing sparingly with water to cause the solution to pass freely and uniformly over the surface, an intensifier, made up according to the formula of Messrs. Mawson and Swan, is employed, viz.:—

Gallic acid	75 grs.
Glacial acetic acid	2 drms.
Acetate of lead	50 grs.
Distilled water	20 oz.

filtered or decanted previous to use.

A little silver is added to the intensifier where very great vigour is required, the working up of the plate being gradually carried on until sufficient density has been attained, the operation being, of course, conducted in the dark room. Fixing with an ordinary hyposulphite solution follows.

When the film has been dried and varnished, no further fear need be entertained of its being deliquescent, the subsequent handling with the intensifier and washing with water having dissolved out all compounds of a soluble character, and the varnish, moreover, affording considerable protection. According to actual experience, a large number of prints may be pulled off without any appreciable deterioration of the plates.

It is unnecessary for me to dwell upon the success of reproducing prints or negatives in this way, as the results shown speak for themselves, and I believe that all who see them will bear me out in saying that they are equal in every respect to the originals.

As a general rule, we must frankly admit that this is not the case; and, whatever may be said to the contrary, it is very seldom indeed that we see a reproduced negative equal in every sense to the original. By printing through transparencies, however, and employing the collodio-chloride method, forcing the plates, both before and after printing, by fumigation and development, this result would appear to be easily attainable.

In the present instance of successful reproduction, some additional interest may be felt from the circumstance that these fleeting historical pictures of the Crimea have been caught up on the eve of their disappearance, and thus being secured, have again been reproduced in permanent pigments.

(Mr. Pritchard exhibited the faded pictures, and likewise the carbon prints reproduced therefrom.)

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IS IT POSSIBLE TO OBTAIN PHOTOGRAPHS IN COLOURS?

BY R. W. THOMAS, F.C.S.

Have colours, in the proper acceptation of the term, ever been produced in the camera? I unhesitatingly answer, no. Various shades of reduced silver, in combination with organic and other matter, are always evident on the surface of an under-exposed and developed negative, when the latent image has been produced under the most favourable conditions, impressed only by that light emanating from the object which is to make its mark on the sensitive surface, thus delineating, in a very subtle and perfect manner, the various grades of intensity of the various reflections, each charged with its quota of chemical action or power of effecting molecular change, and each impressing and disturbing the molecular arrangement of the silver salts according to its power, and that only. I should say that these shades of reduced silver reflect, as a property inherent in themselves, whatever colours may be seen, these colours being due to the differences in the molecular conditions of the silver salts reduced in variable degrees of intensity, and so assuming modified structures. The ultimate results are quite uninfluenced by any specific action of the colours of the object copied, apart from the variable chemical intensities of such colours inducing molecular disturbances in the silver salts, as before alluded to.

Whenever an appearance of colour has been observed on a sensitive plate, the whole picture generally has partaken of it. Any representation of colour resembling that in the object copied has been due to an accidental similarity in colour of the reduced silver and the object itself. I maintain that, from a given inorganic film or tissue, only a given set of shades of tints can be developed, these being produced by a graduated disturbance in its structure, and more or less partaking of a general hue. In tissues having no organism this seems so evident as hardly to need an elaborate statement, were it not that some think otherwise.

Chemists are acquainted only with definite and well-marked forms of metallic substances and their salts; but the more perfect and master chemist, light, is instrumental in producing as many grades of structure and shades of colour as there are rays in his beam. Now I fancy that more sanguine physicists may prefer to illustrate their views and corroborate their theories by an appeal to living organisms. Look at the petals of some flowers; how varied and beautiful, and yet how opposite, are their hues! The gorgeous tulip will give us an illustration; in this case the uniform structure of the petal is apparent only, not real; the difference may be, even to the microscopist, as undistinguishable as the principle which endows its form with life; nevertheless it must exist, and is no doubt a physical difference; for are not the same shades and colours reproduced in the same species year after year with wonderful and never-failing regularity, showing that living substances obey, with a correct impulse, the order of their being? Art and culture are capable of blending and modifying the colours of a species, but, this effected, they remain distinct, subordinate to their organism.

The diversity of colour in the petals of a flower is not due primarily to the action of light; germination of the seed takes place in total darkness, but with it that wonderful organization springs which enables the young and tender plant to elaborate from the soil that food which is to influence its life and beauty, filling the cellular tissues, the fibrous and pulpy matters with those elements and chemical substances which, becoming changed by light, absorb and reflect the rays in modified and endless varieties, decking nature with so much loveliness.

I venture to think that these views are in accordance with the theory of colour as generally accepted. In this sketch I have endeavoured to show that, both in the inorganic and organic worlds, order reigns in the production of colour. Nature knows no system of legerdemain, owns no issues brought about by conjuring tricks: all and every thing must obey her laws; this is evident in all around us. Now, as the production of colours and the sensation they produce on the optic nerve are due to definite and perfectly regulated rules of action, in what direction can we look for the accomplishment of the wishes and for the corroboration of the views of those who conceive the production of natural colours in photographs to be possible? When a tissue has been discovered that contains within itself every molecular form, every kind of pulpy matter, every modification of cellular structure, every chemical substance, compound and simple, and, moreover, holds within itself the grand moving and vital principle, not even then will photographs in colours be produced; for a still more wonderful discovery must yet be made by the alchemist—the elixir that shall excite and develop all these untold members of the mineral and vegetable kingdoms in such a manner as shall call them forth arranged as in a landscape. No mortal may venture to raise his thoughts to the consummation of such expectations, which, in the natural order of things, must ever remain a dream, a chimera of the imagination.

ON GLASS TRANSPARENCIES.

BY ARTHUR COVENTRY.*

THE subject chosen for consideration this evening is one that should be of much interest to us as a society, inasmuch as it has been our custom for many years to have an annual exhibition of glass transparencies by means of the lantern. Nevertheless, whether from want of suitable new negatives, or from lack of knowledge among the members of the points of excellence essential in a good lantern picture, there has been a difficulty in procuring a sufficient number of pictures of the requisite quality for exhibition at our *soirees.* With a view, therefore, of inciting more members to work at this branch of photography, so peculiarly suited as an amusement for the winter evenings, I have ventured to bring before you, for the general good, what little experience I have gained on the subject.

The *sine qua non* in the production of a good transparency is a suitable negative. A negative which gives a brilliant print on paper is quite unsuitable for the production of high-class transparent pictures; nevertheless, many negatives will give good results under both conditions, but the paper prints from such negatives are invariably such as would be designated soft in effect. A suitable negative should possess an infinity of detail without any brilliant high-lights, or any clear glass in the shadows. It may be moderately dense, or it may be exceedingly thin, but the absence of great contrast is the chief point to be aimed at.

The one quality all essential in a good lantern picture is brilliancy, and the chief difficulty consists in securing this quality, and at the same time fully developing the whole of the detail which the negative possesses. The method best calculated to secure the required result is a well-timed exposure and quick development, commenced (in the dry processes) with pyro. and silver, restrained with a full proportion of acid.

Any process used for producing negatives may, of course, be used in the production of transparencies; but inasmuch as each process varies somewhat in the colour of its deposit, some are better suited to the purpose than others. We are all familiar with the beautiful stereoscopic slides of M. Ferrier, by the albumen process. Many of the best slides at our exhibitions have been printed on collodio-albumen plates, others by the tannin and coffee processes, others again by wet collodion, the latter being apparently the process most used in the production, commercially, of the numerous lantern slides now in the market.

On examining the relative advantages or otherwise of these processes, we find that albumen plates, though easy of preparation, require special a bath solution, are very tedious in development, and when developed, the colour is unpleasant, unless toned with gold. Notwithstanding these drawbacks, the results in M. Ferrier's hands are so perfect that it is surprising we do not find more workers in the same field.

By the collodio-albumen process results are obtained almost equal to those on albumen. The colour is more under control during development, and, if desired, the image may be toned by the following method:—Flow over quickly of—

Saturated solution of bichloride of mercury	1 drachm
Water	1 ounce

As soon as the image, by transmitted light, shows a change to a reddish tinge, wash, and fix with—

Hyposulphite of soda	2 ounces
Stock solution of chloride of gold, one grain to one drachm ...	50 minims
Water	5 ounces

The tone, when dry, will be much superior to that obtained by simple development.

Both the tannin and coffee processes give an image the colour of which is well suited for lantern pictures, without the necessity for any toning process; the plates are quickly prepared, and develop freely. The essentials in the preparation of these plates are a suitable, well-aged collodion, a slightly acid bath, and a clean plate. Tunicare, in my hands, always ensures the latter requirement.

The collodionized and excited plate is thoroughly washed, flowed with either of the following solutions, and put aside to dry:—

Coffee	1 teaspoonful
White sugar	10 grains
Boiling water	1 teacupful

Exact quantities are unimportant. When cold, it must be filtered two or three times. Or—

Tannin	10 grains
Water	1 ounce

One drachm of albumen to every four ounces throws down a flocculent deposit, and clarifies the solution; it should be strained through muslin, and filtered till perfectly bright.

For developing, I have used—

Pyrogallic acid	3 grains
Citric acid	3 ,,
Water	1 ounce

I commence developing with one drop of a thirty-grain solution of nitrate of silver to about half-an-ounce of solution, adding a drop at a time as the development required it. The essential point appears to be, to time the exposure correctly, so that the development may be quick, and yet the details well brought out; by using gas-light always, at one fixed distance from the negative, the time for each negative soon becomes a certainty, and we obtain uniformity of result.

The wet collodion method is exceedingly useful for copying large-sized negatives; but for this purpose daylight is necessary. It is also much used for copying from negatives the same size as the transparency required. The chief advantages gained by adopting this process are quickness of production (more work can be done in a given time by it than in any other way), and decrease of risk to the negative. Where large numbers are required from one negative, the danger of scratching the negative in printing by superposition is very great, and is obviated by using the camera.

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* Read at a meeting of the Manchester Photographic Society, Dec. 8, 1870.

No doubt these two reasons have great weight with commercial producers; and hence the explanation of the fact that most of the transparencies offered for sale are collodion pictures. The great drawback to working with the camera is the necessity for either daylight or the lime or other powerful artificial light.

It is possible to work with wet collodion by superposition, but a special arrangement of light is requisite to ensure satisfactory results; and it is also necessary to use two exciting baths—one of thirty grains, the other of twenty grains per ounce. If the usual bath alone be used, the image flashes out so quickly and so dense as to be quite beyond control.

Most transparencies are improved by clearing the sky with a solution of iodine in iodide of potassium. A few grains of iodide of potassium are dissolved in water, and iodine added till the solution is a port wine colour; this is applied to the sky, and quickly converts any deposit of silver into iodide, which is then dissolved off with hypo. The same solution reduced to a sherry colour may be used for reducing the density of the picture, if over-developed.

Though these remarks have been directed chiefly to lantern pictures, they will apply equally to slides for the stereoscope, the only difference being that the development of a stereoscopic picture should be carried further than that of a transparency for the lantern.

ON XYLONITE, A MATERIAL APPLICABLE TO PHOTOGRAPHIC PURPOSES.

BY DANIEL SPILL.*

The name "Xylonite" is taken from the Greek word *xulon*, "wood," and the material upon which this name has been bestowed is derived from wood or woody fibres. These are converted by the action of mixed nitric and sulphuric acids into a rough form of xyloidine, which, being subsequently dissolved into a species of collodion, constitutes the base of a further manufacture.

The material was first introduced to the notice of the public at the International Exhibition of 1862, by Mr. Alexander Parkes, of Birmingham, at which time it had not yet become an article of commerce; subsequently it was manufactured on a commercial scale, and introduced to the world for a short time under the name of "Parkesine" (named after the inventor). The manufacture having been much improved, and the patented solvents and machinery almost entirely remodelled, it was considered advisable that the name should also be changed, and "Xylonite," as being more appropriate for a derivative of xyloidine, was adopted.

The soluble base of this manufacture may be made from any wood or woody fibre, or fibre-producing grasses, old rags, waste from cotton or flax-mills, old rope, starch, Esparto grass, "half stuff" of the paper-makers, &c., but preferably using waste fibrous material from cotton and flax-mills. No doubt most of you are well acquainted with the process of converting cotton into a soluble modification by the action of acids; but for the information of those who are not versed in the matter, I would explain that any one of the before-named substances which may be chosen for the conversion should be first freed from all extraneous matter by boiling with alkali or soap and water, well washed, and dried, so as to leave nothing but a nearly pure fibre for the subsequent treatment. A bath composed of one part, by weight, of concentrated nitric acid, four parts of concentrated sulphuric acid, and one of water having been prepared and cooled to about 70° or 80° Fahr.; a weighed quantity of the purified vegetable fibres is then immersed therein for a period of from one to fifteen minutes or longer, according to the degree of solubility required. The next step is to remove the uncombined acids as quickly as possible, either by draining or pressure (the latter preferred), and then wash quickly in a copious supply of water until the last washings are neutral to test-paper. If the fibre should at this stage retain any colouring-matter (which is not unfrequently the case), it may be submitted to the action of any of the ordinary bleaching-agents without injury to the chemical condition of the xyloidine, which has now to be carefully dried at a low temperature or by pressure (the latter being preferred), when it will be ready for dissolving. The solvents commonly employed in the preparation of photographic collodion are too expensive to permit of their use in the xylonite manufacture, and we have recourse to solvents, either fixed or volatile, or judicious mixtures of both these qualities, by which an almost endless variety of materials can be prepared. The volatile solvents mostly used are wood-spirit, alcohol, aldehyde, mineral naphtha, benzole, and other hydrocarbons; and the non-volatile or fixed solvents are oil and camphor, or natural camphor-oil, linseed, castor, and other vegetable oils. The introduction of these fixed solvents is an important improvement and economy in the manufacture of xylonite, obviating much loss by evaporation and inconvenience arising from contraction of the material. To prepare these solvents take, say, 100 parts of castor-oil and heat up to about 250° or 300° Fahr., then dissolve therein about fifty parts of camphor, and while in the heated condition add the xyloidine, which readily dissolves into a stiff paste, and is then ready for a subsequent process. The condition of xylonite may be varied from the flexibility of Morocco leather to the hardness of ivory or stone by the judicious combination of xyloidine, oil, and pigments.

Having explained the mode of preparing xyloidine, its nature, and properties, and those of its solvents, I will now treat of the conversion of the xyloidine into xylonite and of its application to the arts. Practically, in our manufacture, it is not necessary to dry the xyloidine thoroughly before dissolving it; pressure alone will remove 90 per cent. of its moisture, and in this state it is quite uninflammable, even when held in contact with fire, and yet will readily dissolve in the before-mentioned solvents. Five parts of solvent will reduce one part of xyloidine into a stiff paste by stirring alone; but to blend the materials more perfectly the mixture is masticated or ground between rollers until the incorporation is completed; it is next removed into a strong vessel having a perforated bottom covered with a finely-woven wire sieve, which vessel is then placed beneath the piston of a powerful press, and the paste is thereby forced through the sieve, in order to strain it from all mechanical impurities or undissolved particles of xyloidine. This purified xyloidine is next removed, weighed, and the requisite quantity of oil or pigments added thereto, and then passed to a heated masticator or grinding rolls, or into a retort provided with mechanical stirrers, which, for volatile solvents, are enclosed in an air-tight casing, the latter being in connection with a condenser and vacuum apparatus during the process of mastication or agitation. The volatile solvents are evaporated by the heat and vacuum, and conveyed away to a condenser for future use. When non-volatile solvents are used, the last-named apparatus is not required, heat and mastication being sufficient. When the paste is masticated into a very stiff condition it is removed into a powerful calendering-machine, where it is rolled into sheets of any required thickness, after which it is placed in a seasoning-room heated to 100—120° Fahr. for periods varying from fifteen to thirty days, when it is ready for use.

To produce the mottled or marbled patterns, the paste is first masticated into a stiff dough, each colour separately, then rolled into rough sheets, and, whilst in a plastic condition, weighed quantities of two, three, or more of these coloured sheets are piled upon each other in such a way as is needful to obtain the desired pattern, and the whole are passed together through calendar-rolls, the workmen taking care to relay or fold the sheets between each calendering so as to alter the position of the colours; and the material is finished as already described.

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* Read before the Photographic Society, Dec. 13, 1870.

When preparing hard compounds with the non-volatile solvents it is necessary to use oxidized oil, such as linseed-oil, which will dry and become hard in the process of seasoning. The flexible kinds are prepared with cotton-seed-oil or castor-oil, which will *not* become hard. For coating or waterproofing fabrics, the paste may be applied in a semi-fluid condition with an ordinary india-rubber spreading-knife or machine, or it may be applied in a very stiff paste by the aid of calender-rolls.

In preparing non-actinic sheets for photographic purposes, no pigments are used, but semi-transparent colours only, such as will arrest the passage of the chemical rays, and furnish a material suitable for windows of the dark-room in place of the ordinary yellow glass, but of sufficient depth of colour to arrest *all* the actinic rays of sunlight. In this state the sheets are flexible, durable, and light. When spread upon fabrics it forms a waterproof material, useful for photographic field-tents, giving the operator an abundance of light of perfectly non-actinic quality, thus having a "dark" room combined with a considerable amount of light for personal comfort, and avoiding the use of yellow glass windows altogether. On a future day I hope to offer a flexible and structureless substitute for the glass negative supports. My experiments in this direction are not at present sufficiently advanced to enable me to speak positively on the subject. The applications for the material outside the photographic world are almost innumerable; I may instance a few of them—viz., insulation and protection of telegraph-wire, coating fabrics for waterproof garments, making artificial leather for furniture covering and bookbinding writing-tablets, substitutes for ivory, bone, horn, tortoiseshell, hard woods, marble, &c., knife-handles, friction and gear-wheels, also bearings for machinery, spinner's bosses, billiard-balls, pianoforte-keys, walking-stick and umbrella handles, &c.

It may be turned in a lathe or wrought by the cabinet-maker's or brass-finisher's tools; can be embossed or moulded by heat and pressure, and may be polished like ivory, wood, or stone. It is unaffected by atmospheric influence, heat, water, or grease.

Specimens of this material, and a few articles illustrating its manifold applications to the arts, are submitted for the inspection of the meeting. For the loan of these specimens I am indebted to the courtesy of the Directors of the Xylonite Company (Limited), Hackney Wick, London, N.E., who are the sole manufacturers of the article, they having purchased the patent rights of Mr. Alexander Parkes, and also those of the author, together with the application of the material for covering telegraph-wires, patented by Mr. W. Whitehouse, C.E.

The low combustibility of the xyloidine was demonstrated by firing a portion on a plate, when it burnt slowly, leaving a considerable amount of carbonaceous residue. The efficacy of the non-actinic fabric was proved by showing the result of three weeks' exposure to daylight in November with sensitized paper beneath scarcely affected during this long period.

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PHOTOGRAPHY IN AMERICA

BY DR. H. VOGEL.*

In Wilson and Hood's establishment we saw another contrivance which appeared to us exceedingly practical; it was a cutting table (fig. 3), consisting of a round movable plate and thick glass cover. The picture is placed upon the movable plate, and the glass put over it in the proper position; a pedal is touched by the operator, and a foot, movable upon a pivot, thereupon descends firmly upon the glass ovel, so as to allow of the picture and plate being turned round on its axis during the operation of cutting. In this way oval or round pictures are cut easily and quickly; no shifting of the glass pattern is possible. The instrument is patented by Messrs. Burgess and Leuzis, and may be fitted to any ordinary table; its price, including knife and glass, is twenty dollars.

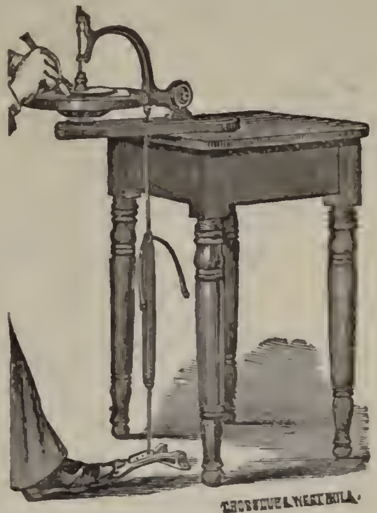

Fig. 3.

The posing chair of the Scovil Manufacturing Company is another photographic convenience worthy of notice. The seat thereof is very practical, being well hollowed out, so as to compel the sitter to place himself deeply therein, a position which is otherwise assumed only at the operator's special request; the back of the chair may, moreover, be heightened or lowered according to the height of the sitter. The American is practical even in the smallest matters.

Of Moore's enlarging establishment, in which work is carried on for photographers in all the States, and of which I have spoken on a previous occasion, I need make no further observation, merely giving here a sketch of one of his simple enlarging apparatus (fig. 4).

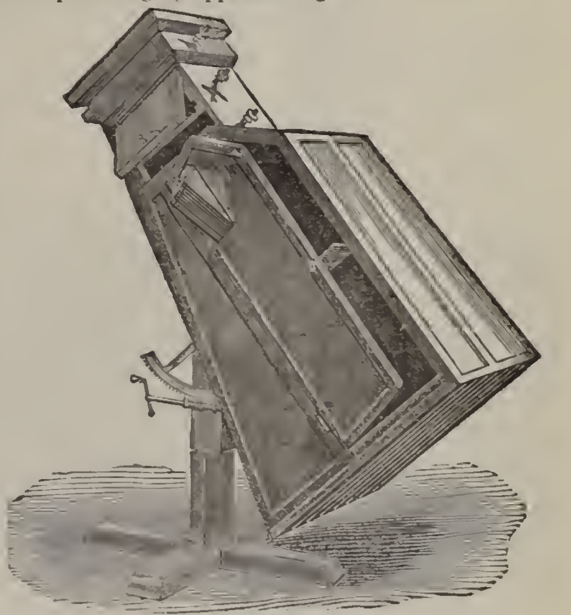

Fig. 4.

This instrument is imported from Liebert, of Paris, by whom it is patented, although the original inventor appears to be Mr. Shive, of Philadelphia, who does not, however, occupy himself any more with photography. The principal point of the apparatus is the combination of the condensing lens, objective, and the dark closet within the picture screen in one box, which, by means of a rack-and-pinion, may be placed in the direction of the sun's rays. Reflecting mirrors, which absorb, as a rule, more than fifty per cent. of the light, are rendered unnecessary. The screen (R) upon which the image is projected (fig. 5), and where the sensitive paper is placed, is located at the lower and larger portion of the box, approached by means of a lateral door; a small opening is also provided for watching the progress of the printing. The condensing lens (B) is fitted at the top of the apparatus, the negative being placed not far from it at N, and the object lens at O, connected by the screw at H. The enlarging lens is so placed that the rays of the condensing lens cross in the optical centre, the negative being brought into focus by the screw adjustment. The softening off of the image is managed in a very simple manner. A piece of cardboard with a serrated opening cut in the centre (fig. 6), is placed between the lens and the screen, as shown at S, and although the exact form of the opening is to be seen upon the screen, the result is different from the optical effect. Moore's enlarging lens is one of Darlot's triplets, the focus of which may be modified by altering the intervals between the different glasses; it is not very powerful, but, nevertheless, gives a very uniform picture. Moore operates sometimes with paper manufactured by Clemons, of Philadelphia, and sometimes with a material from Dresden. His sensitizing bath is of 1 : 48 strength, and he floats for forty-five seconds, or in cold weather for one minute or one minute and a quarter; the paper is subsequently fumed with ammonia for a period of ten minutes, and then stretched out by means of pins. Printing occupies three-quarters of an hour, and one lad is sufficient to attend to as many as eighteen of these apparatus. The methods of toning and fixing are those in ordinary use.

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* Continued from p. 584.

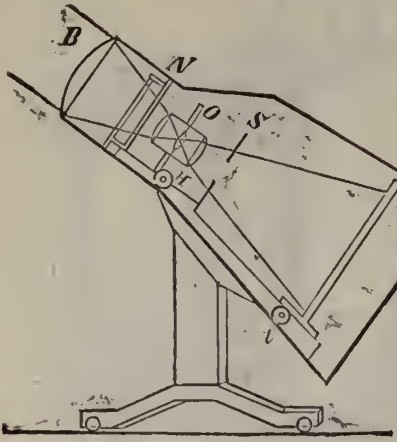

Fig. 5.

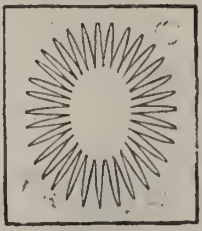

Fig. 6.

Correspondence.

COMBINATION PRINTING FRAMES.

Sir,—In an article by Mr. Taylor in your last number, he alludes to some large registering frames of my design. It may be convenient to mention that these are ordinary printing-frames, converted at the expense of a few shillings for inner fittings, into frames giving absolute perfection of registration, while they can still be (without the inner fittings, which take in and out) used as ordinary printing-frames.

I am not a licensee of Mr. Edwards, as I prefer my own method. H. Stuart Wortley.

[The use of printing-frames permitting perfect registration is manifestly a valuable aid to the printer. We should esteem it a favour if Col. Wortley would give more detailed description of those he has in use.—Ed.]

PACKING AT THE EXHIBITION.

Dear Sir,—Your correspondent "R. H. P." is not the only sufferer from the careless mode of packing the exhibition pictures. I sent up six in a new case specially made for size, a return label nailed on, and the lid screwed down with greased screws to afford the utmost facility for quick unpacking. It was returned to me the other day with one side knocked out and loose, the other broken in, the glass of one picture smashed, and the frames slightly injured.

My pictures were not very valuable ones, nor the frames expensive; I therefore should have made no complaint had I not read your correspondent's letter, and perceived the packers were no respecters of pictures, but had treated the good ones equally with the bad.

In the hope that next year better supervision may be exercised in this department, I venture to trouble you with these few lines,—and remain, dear sir, yours faithfully,

December 19*th*, 1870. An Exhibitor.

YELLOW SPOTS ON PRINTS.

Sir,—Will you permit an old hand at photography to suggest a certain cause for the yellow spots in fixed prints, of which you speak on page 589, in your number of the 16th? I have learned to operate with tolerable success through failures, and the one in question was of yearly occurrence—generally it became rampant about this time of the year and a little later.

In bad weather, photographers who are more or less disgusted at the absence of custom, neglect their operating or store-room for days; no fire is lighted upstairs; the salted paper is poked on a shelf, may be, or in some place fully exposed to the insidious effects of damp. The affinity for moisture in chlorided paper is well known. A small drop of moisture forms itself on the paper (thousands sometimes upon a sheet). The weather changes, or fire is lighted in the room,—the spot dries, but leaves its baneful influence on the paper. The sheet is sensitized, printed upon, &c. When it comes out of the fixing bath, with the picture upon it, it looks like the people who have recently passed through a violent attack of small-pox. *Verbum Sap.* Your intelligent readers, I am quite sure, require no further hint than this to find the remedy.—I remain, sir, your's faithfully, J.

December 19*th*, 1870.

A NEW CEMENT.

Dear Sir,—I am much obliged to your correspondents "T. B." and Mr. F. R. Window for their remarks on "Glycerine and Litharge Cement." I have no doubt that the litharge I employed had lost its combining power through exposure to atmospheric changes and age. I thought of the possibility of this when I tried the experiments which I reported in a late number of your valuable journal; and this opinion is confirmed by an experiment I have tried today to test the property of glycerine when employed in the manufacture of cement.

Some of your readers have probably, in years bygone, experimented with a cement singularly hard and enduring, although very difficult of application, and, withal, unsightly: I allude to thoroughly calcined oyster shells well incorporated with the white of eggs. It occurred to me to substitute glycerine for albumen, and the result is so extremely satisfactory that I venture to communicate it at once to your pages. The oyster shells should be calcined at a white heat, in a common fire, in which it will be well to keep them for about an hour. When cool, scrape off the outside discolouration, and reduce the white portion to a powder, which should be sifted through a fine muslin sieve. Mix this powder with sufficient glycerine to bring it to a stiff pasty mass. I employ a spatula extemporized for the occasion out of an old table knife. The object to be repaired should have those parts which are to be united slightly moistened with diluted glycerine (about equal quantities of glycerine and water). The cement sets quickly, and in an hour becomes very hard. I have not, as yet, compared it with the cement referred to in terms of such strong commendation by your correspondents already mentioned, but, *ceteris paribus*, its colour would give it the advantage.

I am too old, and, I trust, too careful a manipulator, to rush into print with impracticable nostrums, and I have the utmost confidence in commending the result of my experiment to the attention of those of your readers who, like myself, make notes of receipts for good and cheap cements.

It is possible that although I have been a manufacturer of cements for thirty years, and have a note-book half full of them, "glycerine and calcined oyster shells" may, after all, have have been conjoined before; but, so far as my knowledge extends, their union for cementation has not been before published; and under this impression I have much pleasure in communicating my discovery to your readers.—Yours very faithfully, William Law.

Marston Trussell Rectory, Market Harborough, Dec. 17th.

Dear Sir,—In reference to my communication of the 17th inst., on the combination of glycerine and calcined oyster shells, will you allow me to add, by way of postscript, that the admixture of linseed oil with the glycerine, in the proportion of one or two of the former to four of the latter, wonderfully strengthens the cement? The two fluids will not mix, but there is no difficulty in incorporating them with the powdered shells. This composition takes, as may be supposed, a much longer time to set than the former, but becomes in a day or so, if not made too thin, extremely hard and tough.

I am half disposed to wonder whether your correspondents, who kindly related their experience with glycerine and litharge, did not use the unfused protoxide of lead, called massicot, instead of the fused, properly termed, litharge, which crystallizes, on cooling, of a brick-red colour; the former, the unfused, being of a pale yellow colour. But be this at it may, I am now thoroughly convinced that the litharge which I employed was either damaged or impure.

Possibly this may reach you in time to form an appendix to my former letter.—Yours faithfully, W. L.

December 21st.

DISSOLVING VIEWS WITH ONE LANTERN.

Sir,—Allow me to introduce to your notice an invention of mine for effecting dissolving views with a single lantern. Should you think it worthy of notice, I do not so much wish for recompense, as to have the honour of its invention. I have tested it, and it works capitally. I should like to have your opinion as to introducing it to the public, as I am sure it will be a great improvement.

The camera is ten inches long, four wide; there is a square aperture for the transparency, and a *double* groove all through. When a transparency has been shown, before it is removed another is placed in the back groove, and pushed along with a wire opposite the first, causing a dissolving effect; the wire then pushes the first out to the other end of the groove, and is taken out.

The camera is never taken out of the lantern, and the disc is never left a dazzling white.

I think you will confess that this is a great improvement on the old method.—I remain yours very truly, J. Powell.

Ambush Street, Northampton.

Proceedings of Societies.

Manchester Photographic Society.

The ordinary monthly meeting of this Society was held at the Memorial Hall on Thursday, the 8th inst., G. T. Lund, V.P., in the chair.

The minutes were read and passed, and Mr. Richard Kay elected a member of the Society.

The following resolution of the council received the sanction of the meeting:—"That the next soirée and exhibition be held in December, 1871."

Mr. Coventry read a paper on "Glass Transparencies" (see p. 607), and afterwards conducted a lantern exhibition in illustration of his remarks, pointing out defects in colour and density.

Mr. Coote presented several very fine cloud pictures for the Society's portfolio; and complimentary votes to the chairman and to Messrs. Coventry and Coote brought a most enjoyable evening to a close. C. Adin, *Hon. Sec.*

Talk in the Studio.

Heliotypy.—The *Gentleman's Magazine* notices Mr. Edwards's heliotypic process in high terms of praise. The writer says:—"No jot of the photograph's vigour and delicacy is sacrificed, and the beauty that is preserved is everlasting, for the picture is in printer's ink instead of a volatile chemical oxide. The process is thoroughly and commercially practical."

Lecture on Photography.—We learn from a correspondent that Mr. A. H. Allen recently delivered a lecture on photography at Rotherham, at the termination of which he produced a photograph by the aid of the magnesium light and showed the progress of development by placing the plate in a cell containing the developer in the magic lantern so that the gradual appearance of the image was seen on the screen. This is always an effective and instructive experiment.

A Costly Photogarph.—At a bazaar held in New York, in aid of the French wounded, a coloured photographic likeness of Mdlle. Christine Nilsson, with her autograph, brought 250 dollars.

The Prayer Book of 1636.—Mr. Basil Montagu Pickering has been commissioned by the Controller of Her Majesty's Stationery Office to publish the photo-zincographic facsimile of the Book of Common Prayer of 1636, with all the MS. alterations made by Convocation in 1661. The book is an exact counterpart of the original folio volume.

Accident to the Eclipse Expedition.—A telegram has been received from Catania, stating that the *Psyche*, containing the eclipse expedition to Sicily, had struck on a sunken rock six miles north of Catania. All hands, together with the scientific instruments, were saved.

Glue and Glycerine.—Glue is soluble, at the ordinary temperature, in a large proportion of glycerine; glue is permeable by glycerine, slowly at ordinary, more readily at an elevated temperature; glue swelled in consequence of the absorption of water remains unchanged in appearance under glycerine, that is to say, even if the glycerine should abstract the water, the former will take the place of the latter liquid, thus preventing the shrinking of the glue; glue, by continued digestion, dissolves completely in glycerine, gelatinizing on cooling; the solution of glue in glycerine is accelerated by previous maceration in glycerine, and by increasing the temperature, and doubtless also by pressure; glue thoroughly permeated by water dissolves in hot glycerine about as readily as it does it hot water.—*Am. Jl. of Pharmacy.*

Recovering of Iodine from Substances which Contain that Element.—Dr. F. Beilstein states that when only iodine is present, the separation of that substance does not involve any difficulty, and, therefore, the process to be detailed refers to the separation of iodine from substances simultaneously containing bromine and iodine. The sufficiently concentrated saline solution (containing, of course, iodides, bromides, and perhaps chlorides), is acidified with sulphuric acid, and a current of nitrous acid gas, obtained by heating one part of starch (dry) with six parts of crude nitric acid, is then introduced into it. This operation requires cautious management, so as to obtain a regular supply of gas. The effect upon the solution is the separation of iodine, which is separated by filtration, as directed by Bunsen, washed with cold water, and dried over sulphuric acid. If it is desired to separate the bromine, if present, the filtrate is first heated in a basin, for the separation of any iodine which might have been left dissolved, and the fluid is then distilled, with a mixture of sulphuric acid and manganese.—*Chemical News.*

Improved Method of Producing Hydrogen Gas.—MM. Tessié du Motay and Maréchal, who have lately discovered a mode of obtaining cheap oxygen for illuminating and medical purposes from the manganates of soda, have sought a more practical and economical method of producing hydrogen by the decomposition of water by means of carbon, and they have discovered the following method, which has given the most extraordinary results. Alkaline, and earthy alkaline hydrates, such as the hydrate of potash, soda, strontium, baryta, chalk, &c., mixed with charcoal, coke, anthracite, pit coal, peat, &c., and heated to a red heat, are decomposed into carbonic acid and hydrogen, without further loss of heat than that due to the production of the carbonic acid and hydrogen. The hydrates or potash, soda, &c., and more especially the hydrates of chalk or lime, decomposed by the coal into hydrogen and carbonic acid, can be used indefinitely in this process, provided they are moistened each time with water so as to reproduce the decomposed hydrates. In this operation, the hydrogen gas is generated without any special production of steam, and may thus be produced without any other generating apparatus than the retorts themselves. These retorts, not being exposed to the direct action of the steam, are not subject to any interior alteration or damage. It follows, therefore, that the hydrogen gas produced by the decomposition of the above-named hydrates by means of carbon can be generated at a very small cost, and with the same facility as carburetted hydrogens from the distillation of pit-coal or other organic hydro-carbon matter. These alkaline and earthy alkaline hydrates may be mixed with the different mineral or vegetable combustibles, either in a definite chemical proportion, or without a fixed or determinate proportion, and in any suitable distilling or heating apparatus, in order to produce, when heated to a red heat, hydrogen gas for illuminating and heating purposes. The advantage of the production of hydrogen as cheaply as oxygen has been obtained would create a revolution in many industries, and especially in metallurgy. A cheap method of producing a great heat in order to reduce metals, such as platinum, gold, silver, and iron, has been long sought for in Europe, where the oxyhydric blowpipe is now used to melt the platinum in a calcium crucible. By this discovery it becomes possible to obtain an immense heat which could be regulated by a simple tap. Enamellers and porcelain makers would thus get rid of one of their greatest troubles.

To Correspondents.

John Stone.—We have never tried intensifying an ammonia-developed plate by means of bichloride of mercury, but we have no reason to doubt the possibility of such intensifying. The result of development is, in all cases, an image in metallic silver, and a solution of bichloride of mercury applied will result in a precipitate of calomel on the plate.

C. C. Cox.—We shall shortly publish the details in question. 2. In the Fothergill process the albumen should not contain either bromides or iodides. If iodized or bromized albumen be used, the plate will require a second application of the silver bath. Iodide of silver plus iodide of potassium or similar iodide is not insensitive to light. A collodio-albumen plate, for instance, is insensitive when coated with the iodized albumen.

Collodio-Albumen.—Some care and judgment are necessary in making a solution of gelatine in alcohol. It is desirable to employ as small a proportion of water as possible, yet, if too little be used, the gelatine is precipitated. We have found also that it is of vital importance to add the alcohol a few drops at a time, keeping stirring, and maintaining the heat of the gelatine solution. Mr. Tunny resides at Edinburgh, not at Sheffield.

E. S.—We have published many formulæ for development, printing, and enlargement. Make a solution of—

Water	10 ounces
Iodide of potassium	50 grains
Bromide of potassium	50 ,,
Common salt	10 ,,
Citric acid	10 ,,
Gelatine...	10 ,,

dissolving the gelatine in part of the water, warmed. Float good stout *Rive* paper on this; excite, when dry, on a fifty-grain silver bath; develop with a saturated solution of gallic acid; wash and fix in hypo, one ounce in four of water.

G. E. C.—Apply to Mr. Bovey. You will find his address in the advertisement pages of our last number.

Bromide.—There is such a salt as bromide of magnesium. You can obtain it of any London photographic chemist. 2. The golden syrup solution is made by mixing

Golden syrup	10 ounces
Water	10 ,,
Alcohol	6 ,,

3. A short camera-stand may be used for a tent-stand. 4. At the end of the year.

W. W.—We regard a fixing solution of one part in hyposulphite in eight parts of water as too weak for general purposes. One part in four or five of water will give a safer fixing solution. 2. Distilled water is not necessary in a fixing bath. 3. The toning bath you mention may answer, but it will not keep long; probably not until next day. 4. The developers you mention are No. 1, rather more than eighteen grains per ounce; No. 2, rather more than twenty-one grains; and each of the others, twenty-four grains. 5. You will ascertain best by trying. The suitability of a developer cannot be decided in the abstract; it depends upon collodion, bath, light, temperature, &c. 6. Either of the intensifiers will answer, and each very much like the other. 7. There is no especial advantage in acetic acid over citric acid in an intensifier, beyond, perhaps, the fact that acetic acid gives generally a warmer colour to the deposit. 8. We should prefer A or B. 9. We can only suppose, in making the alcoholic gelatine solution, that you had not added the alcohol in sufficiently small quantity, or stirred the gelatine sufficiently rapidly to get perfect incorporation, or had added too much or too strong alcohol. 10. If your chloride of gold be very acid, it may be neutralized with chalk in making an acetate bath. 11. Mix the chloride of gold and chalk with a little water into a paste, then add the water and chloride of calcium.

J. Preston.—The qualities of the card portraits forwarded are very excellent. How is your nitrate bath prepared, and how made alkaline?

H. S.—We are sorry to hear of such troubles, but as we know nothing whatever of the constituents of the collodion in question we cannot help you. Whenever you are trying a novelty, try it on a small scale first. Do not risk spoiling 160 ounces of silver solution by an experiment. Take a portion of the collodion and try adding a little tincture of iodine; take another portion, and try adding a little plain collodion. Try a portion of the bath with permanganate, and another portion with sunning. About the collodion consult the manufacturer.

A Photographer in a Fix.—The spots and dirty yellow discolouration of the print you enclose is due to imperfect fixation. The hypo bath has been old and exhausted, or too weak, or the print has been imperfectly immersed, or stuck to another. Insoluble hyposulphite of silver has been formed instead of the soluble double salt, which is removed by washing. The insoluble single salt, formed when the fixing bath is weak or exhausted, of course, cannot be removed by washing; but as it is easily decomposed by light, and forms the dirty yellow brown mottling in the print, manifest in yours, which is generally first noticed on removing the print from the washing water. Cold weather tends to produce such a result if the hypo solution be weak or old.

G. Smith.—Collodio-chloride is not, we regret to say, sufficiently sensitive for printing by gaslight without development. We do not know of any substance sufficiently sensitive to give an image without development in any workable time by gaslight. 2. The symmetrical arrangement you suggest would be free from distortion, but would lack other good qualities, and would require a small stop. The rapid lens mentioned has its front and back combination nearly similar in form, but varying in other particulars.

Elwood Terry.—*Art* is published by Sampson Low and Co., Fleet Street.

S. S.—Your question, "Can I make a paper negative by artificial light?" is a very indefinite one. Do you mean make a paper negative of some object, or to copy a print by superposition, and so get a negative? And what kind of artificial light do you mean? Paper negatives are waxed, to enable the light to pass more readily, and so to print more rapidly.

S. Arlidge.—The prints are very good, and the lens apparently defines well. We should have preferred the portrait negatives a little less intense, which would have caused them to yield a little more detail in the flesh tints; but the work is, on the whole, good.

R. Tudor Williams states, for the information of "South Devon," that he is, and has been for seven years, a professional photographer; and he sends details of the coffee process as he employs it. These details we shall publish shortly. Thanks. The letter was forwarded.

Several Correspondents in our next.

THE PHOTOGRAPHIC NEWS.

Vol. XIV. No. 643.—*December* 30, 1870.

CONTENTS.

PAGE
Cracks in Negative Films 613
Recent Patents 614
On Liquids of High Dispersive Power for Prisms. By W. Gibbs 614
On Shortening Exposures in the Camera. By M. Carey Lea ... 6
Bottle for Measuring Drops.. 616
PAGE
Correspondence.—Piracy and Copyright—The Splitting of Varnish Films—Dissolving Views with One Lantern—Harrison's Head-rest 616
Talk in the Studio.. 618
To Correspondents.. 618
Index..619–624

CRACKS IN NEGATIVE FILMS.

There is no more annoying risk to be incurred by the photographer than that involved in the occasional splitting or cracking of the films of his negatives. Sometimes the disease will set in suddenly in an establishment where, after the practice of many years, such a thing has been unknown before. We repeatedly receive appeals for advice in such cases, in which we are assured that all the routine of business has been continued for years in precisely the same manner, without the slightest indication of such a defect; when suddenly, without the slightest change in any of the materials, or modification of any kind in the minutest point of practice, day after day the films are found to be covered with vermicular cracks, and this occurring generally—in fact, always—in the negatives taken within the last few months. We have before pointed out the majority of the causes in operation, so far as they are known. Imperfect washing of the film, the use of water containing traces of hygroscopic salts, bad varnish, damp storage, change of temperature, &c., are amongst the principal known causes of the trouble in question.

It is to be noted, however, that the cracking of the film assumes two essentially distinct forms, the honeycomb and the vermicular. In the former, the film is raised in honeycomb-like ridges, which do not crack until they are crushed or abraded. This kind, the evil of which may often be repaired by the vapour of alcohol and other remedies, is most frequently the result of moisture in some form. But the second form, the vermicular, appears to be due to other causes. In this case, it is quite clear that, whatever its remote origin, its proximate cause is the unequal contraction of the film of varnish and the film of collodion. The varnish, from some peculiarity or defect of constitution, or the action of some extreme change of temperature, has contracted. If the film of collodion had been sufficiently elastic to yield and contract with the contraction of the varnish, no injury would have followed; but the film being non-elastic, as in the case of all opposing forces, the weakest must yield, and the collodion film is split into fine hair-like cracks of fantastic vermicular forms. There is no remedy for these, although, by rubbing finely powdered carbon into them, they may be rendered almost invisible in printing. But the question of primary importance is, Can these occurrences be prevented? Many suggestions have been made to aid us in overcoming of such risks, and all of them are worthy of attention. It is of primary importance not to use only hard, brittle, non-elastic gums in the varnish. It is an excellent plan to strip about one-eighth of an inch of the film all around the edge of the plate before drying, as by this means the collodion is detached from the extreme edge of the plate, where it is held fast, and hindered from contracting freely; and being dried on the extreme stretch, it is much more liable to subsequent cracking than if it has been permitted to shrink a little in drying. The interposition of an elastic film, like that of india-rubber, has been proposed, between the collodion and the varnish; but this was found to be attended with other troubles, which made its continued use undesirable. Some other remedies have also been suggested.

One of the most promising of all the methods yet proposed, recently comes to us from Herr Kruger, of Schwerin. Recognizing the cracks in question as the result of unequal contraction between the varnish film and the collodion, and remembering that the hardest resins, which yield the most perfect protection to the negative, are often the most inelastic and unyielding, he proposes an addition to the varnish, which, without reducing its hardness, shall increase its toughness and elasticity. Essential oils, turpentine, soft gums, and other similar additions, which have been tried, have been found wanting, being themselves subject to injurious change. The substance he proposes, remains, he states, unchanged; it confers elasticity and toughness, without impairing any other good property of the varnish. It is simply castor oil. This, practically, never becomes perfectly desiccated; but it is present in such infinitesimally small proportion, that, although it modifies the unyielding nature of the film, it imparts no perceptible oleaginous character or stickiness. The proportion must be discovered by experiment, but a few drops to each ounce will, we apprehend, be sufficient.

Incidentally, another advantage, according to Herr Kruger, is gained: the film is less glassy, and furnishes a tooth suitable for touching with lead pencil in ameliorating defects in the negative. Altogether, we think the suggestion promises to be a good one, and is well worthy of attention from photographers.

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THE ECLIPSE.

The eclipse of the twenty-second instant, partial in this country, where it was well seen a little after noon; the thin clouds interposed a sufficient veil to allow of satisfactory examination of the eclipse by the naked eye. Notwithstanding the mishaps which attended the outset of the expedition, the telegrams which have arrived speak of general success. In consequence of the accident to the *Psyche*, an alteration of the programme became necessary, and Catania was made the headquarters of the Sicily expedition

A telegram was received from Mr. Lockyer to the following effect:—

"*Catania, Dec.* 22, 9 40 *p.m.*

"Observations of eclipse greatly interfered with by unfavourable weather, but substantial results have been secured. A definite (contact ?) of the corona was noticed at the height of about one third of radius as presented for corona. The sphero spectroscopic method for first contact was successfully employed. The American observations of last year upon the coronæ are confirmed."

It will be observed that nothing is here said about the photographic results; but in a telegram received by the Astronomer Royal from Lord Lindsay, whose place of observation was La Maria Louisa, opposite Cadiz, it appears the photography was successful. The telegram runs:—

"Photographs successful. Two good pictures of corona. Polariscope doubtful. Sketching good. Corona [gives] continuous spectrum, no lines. Broken sky."

Nature says:—

"The French Eclipse Expedition may not have proved a failure, as has been feared. We have received intelligence from Paris that on the 1st December M. Janssen left in a balloon, assisted by a sailor. No letter was given him in order to prevent the Prussians detaining him as a prisoner of war. A balloon reached Brittany about that time, and was styled a private balloon. Telegrams and notices were sent to France from Mr. Lockyer, to invite M. Janssen to join the English Eclipse Expedition, but it appears that none of these communications have reached him, owing to the interruption of regular postal telegraphic service in France. M. Janssen was intending to proceed to Medeah, an Algerine town.

Recent Patents.

PRODUCING CHROMO-PHOTOGRAPHS.

BY WM. MCCRAW.

The following specification describes certain improvements in photography by processes which combine printing, painting, and transferring, for the production of chromo-photographs by the use of ordinary negatives.

The Printing.—I proceed, in the first place, to produce a print or copy from a negative that is independent of, or that can be separated from, the glass or paper, or other temporary support necessary to its formation. For this purpose I coat one side of a glass plate with collodio-chloride of silver having a good body of collodion, and having dried and fumed the surface with ammonia, I print strongly, and tone the image, if necessary with solutions of all, or any, or either of the chlorides of gold, platinum, and sodium. With these three the operator, with a little practice, can produce a picture of almost any tone or colour—red, blue, or yellow, or combinations of them.

To describe another suitable method: I coat a plate of glass with plain collodion and immerse in water for some minutes. I then pour over this wet surface a mixture of honey, albumen, and saturated solution of bichromate of potash in water—about equal parts of each; or I use other well-know substitutes, such as sugar, gum, and bichromate of ammonia. This prepared plate is dried at the fire in darkness, and, after exposure to light under a positive photograph, colour in powder is applied with a soft brush. To develop the picture, it is now immersed in water slightly acidulated with sulphuric acid; or a few drops of strong ammonia in the water serve the same purpose of clearing away the yellow chromate. This picture, when dry, is ready for the next process.

For pictures of this kind, instead of using a negative, I employ a positive, or print from a negative obtained with collodio-chloride of silver, as already described. There are many other well-known methods or processes for producing prints suitable for this purpose, namely, the ordinary photographic collodion processes, wet or dry, including enlargements by the camera; the carbon process; the Woodbury process; or by any other method by which a photographic copy can be made that has the same or a similar appearance on either side when produced upon glass.

Having obtained the print on glass, I proceed to the painting. I use the artist's oil colours mixed with japanner's gold-size or other quick driers for saving time. I can also use water colours to begin with, as in the case of a portrait, for colouring the lips, articles of jewellery, or for remedying spots or defects, as this can be dried at once. I then paint over the whole with the appropriate local colours of the parts, and the painting may be completed at once.

It must be understood that the effect is to be observed from the other side, which can be readily done when the picture is on glass. After a little practice, however, in this way, some of my assistants prefer to apply the colour to the film-photograph supported on paper and removed from the glass, by pasting white paper on the film, using starch, sugar, or gelatine, or a mixture of these, in water. This is allowed to dry, and can readily be removed from the glass at any time by slightly moistening it again. This has the advantage, with others to be after noted, of giving the picture in its true relative positions when finished, in the case of direct prints on glass from negatives being used.

Transferring.—The picture, when dry, is ready to be transferred to canvas or any other suitable surface or material, and is, in fact, precisely in the condition of a picture ready to be lined, which is an ordinary operation of the picture-liner. I smear the painted surface, as well as the surface of the canvas, with what is known to picture-liners as "lining paste"—a mixture of glue, flour, and Venice turpentine—the two pasted surfaces being pressed together. The excess of paste is expelled by passing over it a smoothing-iron heated to about 130°, and soon after the picture readily parts from the glass. It may be remarked that it the picture be removed from the glass whilst still warm and moist, a duller surface is got than when the picture is not detached for a day or two, when it then receives or partakes of the quality of the surface of its support, whether dull or polished.

For the sake of clearness I have hitherto spoken only of painting the film as still adhering to glass; but in many cases it is an advantage to use the paper-supported film for painting on, as in the case of transferring the picture to a rigid surface, such as a panel; and it becomes very important when a number of copies of the same subject is required, as in the case of reproducing works of art, as the colours can then be applied by chromo-lithography or other known mechanical means, and when the picture has been trimmed at the edges and transferred with the painted side down, as already explained, to paper, cardboard, or other permanent support, the paper temporarily covering the picture is easily removed by passing over it a sponge dipped in tepid water.

By another application of the same principle I can produce vitrified enamel-chromo-photographs. In carrying out this part of my invention I produce a vitrifiable film-photograph by either of the well-known methods known severally as Grune's method and the "dusting-on" process.

I now cut from a large globe of blown, thin, soft glass a piece of the required size and shape. I cover the convex side with this film, and, after filling up the concave with stucco, I subject this to heat in the muffle of an enameller's furnace. When cool, I paint this picture with appropriate enamel colours, and again fire. This thin glass, bearing the painted picture, is returned to the muffle, picture side down, and allowed to fall over a white enamel surface prepared to receive it. The edges can now be ground and polished, to fit any setting.

Having thus described the nature of my invention and the manner of carrying the same into effect, I would observe that I do not confine myself to the precise details herein described, as they may be modified as circumstances may require; but what I claim as novel and desire to be secured to me by the hereinbefore in part recited letters patent is, the production of chromo-photographs by introducing colours between the photograph and its support, such photographs being embodied in a transferrable transparent film or medium, the support being opaque.

ON LIQUIDS OF HIGH DISPERSIVE POWER FOR PRISMS.

BY WOLCOTT GIBBS, M.D.,

Rumford Professor in Harvard University.

Of the liquids which have hitherto been proposed for the constructions of prisms, bisulphide of carbon unquestionably presents the greatest advantages. It is cheap, colourless, and unites a moderately high mean refractive to a very high dispersive power. By tacit consent, a prism of 60° filled with this liquid has come to be adopted as a sort of standard. The disadvantages of the bisulphide are equally well known, and I have spent no little time and labour in the endeavour to find a liquid with a still higher dispersive power, less volatile, less sensitive optically to changes of temperature, and less offensive in odour. In these efforts I have not been altogether successful, no one liquid examined possessing all the qualities desired. Many organic liquids with high dispersive powers are difficult to prepare in a state of purity, and speedily become discoloured by absorption of oxygen from the air. Such are oil of cassia, the colourless oil obtainable from balsam of Peru, and others. The thallic alcohol of Lamy[*] is far too costly. The solution of silico-tungstate of sodium[†], of meta-tungstate of sodium[‡], and of soluble tungstic acid[§] as obtained by dialysis, all promised good results from their extraordinary densities, but all proved difficult to prepare in a state of purity, and extremely easy of decomposition.

A solution of phosphorus in bisulphide of carbon has, according to Messrs. Dale and Gladstone[‖], a dispersion of 0·225[¶], or nearly one and a half times as great as bisulphide of carbon alone, but becomes turbid on exposure to sunlight, from the formation of amorphous phosphorus. It occurred to me that, by dissolving sulphur with the phosphorus, the formation of amorphous phosphorus might be prevented, and experiment proved that this was the case. The solution, as thus obtained, has a pale yellow colour, but is perfectly clear, and undergoes no change by the action of light, even when long continued. I have been in the habit of preparing it by dissolving 1 part of dry flowers of sulphur and 2 parts of phosphorus in 4 or 5 parts of bisulphide of carbon, and filtering the liquid through a well-dried ribbed paper filter, which is easily done. The refractive and dispersive power of the solution will, of course, vary with the quantity of phosphorus and sulphur dissolved. By a gentle heat, the whole, or nearly the whole, of the bisulphide of carbon may be driven off, a liquid compound of sulphur and phosphorus remaining, which has so high a mean refractive power that it cannot be employed with prisms having a refractive angle of more than 45°—50°. The same end may, however, also be attained by continually adding phosphorus to a saturated solution of sulphur in bisulphide of carbon, in which phosphorus appears to be soluble without limit.

With a strong and probably saturated solution of sulphur in CS_2, the angle between Li and D was 0° 50′ 10″. When phosphorus was added, the angle was 2° 25′ 30″, the refracting angle of the prism being 60°. In this last case the angle between Na_1 and Na_2 was 0° 2′ 20″. The spectrum was perfectly clear, the definition of the dark lines leaving nothing to be desired. In consequence, however, of the yellow colour of the liquid there is always a marked absorption of the violet end of the spectrum.

In working with the above-described solution, I have employed hollow glass prisms with refracting plates cemented on with a mixture of glue and molasses. These were found to be perfectly tight, and to last for months without change. The great disadvantage in the use of a solution of sulphur and phosphorus consists in the danger of breaking the prisms; the liquid taking fire spontaneously when it has been a few seconds in contact with any porous material like wood or paper. On the other hand, however, the large quantity of sulphur present prevents the fire from spreading, a drop placed upon a piece of wood leaving, after combustion, only a charred spot. When not in use the prisms should be kept in an iron pot with a tight cover. In this manner I have employed and preserved two during a long and hot summer. The viscid, or rather oily, nature of the solution serves to prevent, to a great extent, the formation of ascending and descending currents from slight changes of temperature; and, when the prisms are well shaken before use, the definition remains perfect for a long time. In my spectroscope, the prisms rest upon a plate of glass instead of upon one of metal.—*American Journal of Science.*

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[*] *Ann de Chim. et de Phys.*, 4th series, vol. iii., p. 373.
[†] *Ann. de Chim. et de Phys.*, 4th series, vol. iii., p. 5.
[‡] Shiebler, in *Journ. für Prakt. Chim.*, vol. lxxxiii., p. 273.
[§] Graham, in *Journ. Chem. Soc.*, vol. ii., p. 318.
[‖] *L. and E. Phil. Mag.*, vol. xviii., p. 30.
[¶] The number 0·225 is the difference between the indices for the extreme end and violet rays.

ON SHORTENING EXPOSURES IN THE CAMERA.

BY M. CAREY LEA.[*]

THE subject of the modification of the camera image by the admission of extraneous light is attracting more and more attention. Having made many trials of the system which I lately suggested, since my publication on the subject, I return to it here, the rather, as I think, that some of the views taken upon the question, by those who have written on it, are not quite accurate.

The idea of admitting white diffuse light upon the image is known to be quite old. Cameras lined with white were occasionally used some fifteen or twenty years or more ago. Mr. Gage proposed a plan, and I believe patented it, of exposing the lens for a few moments, either before or after making the picture, to a surface of black velvet. Mr. Blair revived the white lining plan. But a more important contribution to our knowledge was made by M. de Constant de Lessert, who experimented with separate slips of cardboard, and thus ascertained the advantage of limiting the extraneous illumination to particular portions of the image. His experiments have been more particularly directed to portraiture. Next, M. Bazin inserted red cells into his camera front, availing himself of the peculiar advantage of red light.

My own share in the work has consisted in applying this principle, and using red light to a local use instead of a general, by inserting pieces of red cardboard, cut to a particular shape, into the cameras. In M. Bazin's plan the red light fell on all parts of the image equally, or nearly so. This is undoubtedly an incorrect principle. It is of the highest importance that the assistant light should be made to act where it is wanted, and not where it is not. I have also sought to determine the general principle by which we should be guided in applying this aid to landscapes. The following are the conclusions which I have reached.

A red lining, covering the whole inside of the camera, is not at all to be recommended; a white one is still worse. Any plan that extends the red or white illumination over the whole image is radically bad. Any device that tends to throw the strong light from the sky over the rest of the image injures it; if allowed to act to a small extent it causes flatness, to a longer one fog. Therefore the red pasteboard should be applied only against the top of the camera, and should extend downwards as much only as may correspond with the object, and should in no case extend so far as to come opposite the sky, or any portions of it. To accomplish this, I take a piece of white pasteboard of sufficient length, and bend it twice across, so that the middle portion fits against the top of the inside of the camera, and the sides extend down the sides of the camera and rest against the bottom. These side pieces are cut tapering, so that where they touch the bottom they are about an inch wide. The inside of this pasteboard is coloured pale rose colour, with a very weak solution of carmine in water, to which a trace of ammonia has been added. The lower ends of the sides, which may be supposed to come opposite the sky portions of the image, are blackened with ink. As there is very generally more sky at one side of a landscape than the other, I carry the blackening an unequal distance upward on the two side pieces, making one black for about two-thirds of the space, and the other for about one-third. These may be made to correspond to either side of the camera, as may be wanted, by removing the piece and turning it one-half round, and replacing it, the other side foremost, in the camera.

Used in this way I have found the application most useful in certain cases. Where the foregrounds are badly lighted, the red cardboard is extremely useful, as also where there are masses of foliage to one side of a picture more or less imperfectly lighted. On the other hand, where a picture is brightly lighted throughout, especially where the foreground gets a good clear light, it would be a mistake to use the accelerating cards.

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[*] *Philadelphia Photographer.*

Such, at least, has been my experience. I now always take these cards with me in going out to photograph, and use them very frequently and with satisfaction. What I say in favour of the system is based upon a very considerable amount of experience, and I would be sorry to give up what I find to be a really valuable aid. The latest suggestion in connection with this subject is Mr. Griswold's idea of a translucent diaphragm. This is a convenient way of operating, I should judge, but I have not tried it, because it is liable to the same objection of throwing the light over the whole surface, whereas, as I work, I can compensate by the card for unequal illumination, at least to some extent. And this is, in my opinion, the principal attraction of the whole method, except, indeed, where instantaneous or very rapid exposures are wanted.

It is a good plan to have an extra piece of card, painted entirely black, so that when either side of the picture does not need any helping, but is better without, then this black shield may be laid against that side, and completely cover that part of the red card.

From my own experiments, I am inclined to believe that this idea of using extraneous light is really useful. When well managed, it does not, as might be imagined, tend to fog, or veiling. And I think that it will in future be adopted by many photographers. But I must repeat what I have said before, that all methods which distribute a strong light in all directions do so at the expense of the brilliancy of the picture, and therefore do not deserve adoption, except, as already said, for instantaneous exposures.

It should be well understood, that the influences of red and of white light admitted to the camera image differ radically.

First, as to white light. Let us suppose that the very faintly lighted parts of the subject receive a light which, when compared with the most strongly lighted, is as one to fifty, whilst there are some portions of absolute shadow on which the light may be represented by 0. Let us also suppose that the light, of which the intensity is measured by 1, is so weak, that its image cannot be developed at all. It is then evident that these very faintly lighted parts will appear as absolute shadows, and thus there will be a certain deficiency of detail in the shadows.

If now we admit a faint light all over the picture, the intensity of which faint light is equal to 1, the whole relations will be changed. The intensity of the very faint parts will be raised to 2, at which point they may be sup-to be developable. The absolute shadows receiving previously 0 of light, will now receive 1, but, by supposition, this amount is not capable of development; they will, therefore, remain absolute shadows. The highest lights will receive a strength of light measured by 51, scarcely an appreciable change. With intermediate degrees the effect will be intermediate.

Evidently the effect here is altogether beneficial. Unfortunately, we cannot command this exact portion of light; we cannot be sure of not admitting more or less. And if more, then the shadows become greyish instead of rich black; if less, we miss our object.

With a pure red light the case is altogether different. With it we enhance the action of the lights, without acting upon the absolute shadows. We therefore increase the detail in the shadows without taking from their richness and brilliancy. Whilst the white light tended to soft, flat pictures, the red tends to soft, brilliant pictures; and no one can hesitate where to award the preference.

And further, when we localise the effect by placing the red cardboard against such portions of the interior as correspond with parts of the image imperfectly lighted, we get a double gain, more softness and more harmony, we tend to avoid harshness and crudeness, and to escape those vexatious images of which one part refuses to come out until some other part is over-developed.

For portraiture as well as landscapes, this mode of operating will have evident advantages in gaining softness without sacrificing brilliancy. Where the lower part of the figure, or the side farthest from the light, needs increased light, a lining corresponding with those portions, of red cardboard, will be advisable. Or if the object be simply to gain in rapidity, the whole interior may be lined, or any other device may be used to admit red light over the whole image.

BOTTLE FOR MEASURING DROPS.

Take an ounce vial, such an one as that in which you purchase your nitrate of silver. Bore a hole through the middle of a good cork which fits the aperture of the vial, and through this aperture insert a piece of glass tube so as to fit tight and just pass through the cork. The upper part of the tube, which is about two inches in length, is drawn out into a capillary termination, and then the termination is broken off at a place where the orifice is sufficiently large to admit an ordinary pin. The tapering part of the tube is, besides, bent into a curve, so as to lean on one side.

Whenever it is required to use two or three drops of nitrate of silver, or of any other solution, invert the bottle—that is, turn it wrong side up—and allow the fluid to drop out, drop by drop, until the proper quantity is thus obtained. The heat of the hand on the lower part of the vial will expand the air and cause the fluid to drop out more rapidly; and if the latter should cease to drop, all you have to do is to turn the vial right side up for a moment, and allow fresh air to rush in, and then to invert it again.

Such an arrangement as this is much superior to the common system of dropping a fluid from the neck of a bottle: it is more accurate, because the drops are nearly of the same size; and it is much cleaner to pour drops in this way, because there is no need of their coming into contact at all with the fingers. Furthermore, if you once know how many drops from the orifice of a given tube go to a drachm, such a vial and tube may be used for measuring out minims.

Glass tubes may be bought by the pound, or a single tube of any required length may easily be got in the city. In order to draw out the wire, heat it in the gas-flame, or in the flame of a spirit-lamp, to redness, and then, seizing the heated end with a pair of pliers, it may be drawn out to a capillary orifice, and, at the same time, bent into the requisite shape. This is the work of a few minutes. After the end is cool, the terminal part is broken off with the fingers. At the distance of two inches from the end you proceed round the tube with a triangular file, thus making an indentation. At this indentation the tube is easily broken off with a slight pressure of the hand.

Correspondence.

PIRACY AND COPYRIGHT.

Sir,—Your valued correspondent, "An Old Photographer," in his last communication, says, "The recent discussion on the question of copyright in your pages serves to illustrate one point, if nothing more, the miserable uncertainty and complexity of the whole law on the subject." I was in hopes the discussion had had a contrary effect. I will recapitulate the conditions upon which copyright is granted. First, with reference to engravings, 8th Geo. II., cap. 13, "Every person who shall invent, engrave, &c., &c., . . . shall have the sole right and liberty of printing and reprinting the same for the term of fourteen years, to commence from the day of the first publishing thereof, which shall be *truly* engraved, with the name of the proprietor on each plate, and printed on *every* such print or prints." These are the conditions to be observed in order to obtain copyright in an engraved plate. I think they could scarcely be made more simple; if a publisher observes them, his copyright is unassailable. Other Acts have been passed to widen the application of the original Act, but the conditions have never been altered. The Artistic Copyright Act requires that the work be original, made or first sold after the commencement of the Act. and registered at Stationers' Hall; and also that, at the time of first sale, a written agreement be made between the vendor and vendee, either reserving or transferring the copyright. The reason that disputes arise is, that these conditions are not observed at all, or are imperfectly observed.

"Further, it seems tolerably certain that the administrators of the law incline generally to give the benefit of a doubt to the holder of a copyright." Now, in so doing, magistrates act contrary to the principles of English law, which require that, in any case where there may be doubt, the defendant should have the benefit of it. In one instance within my knowledge, in consequence of doubt as to the validity of the copyright, a magistrate dismissed five summonses for infringing the copyright of Millais's "My First Sermon."

I am not seeking to find out "a weak joint in the armour of maintainers of copyright," but to show that in the cases which have come under my cognizance there was no armour at all—that the copyrights, in fact, are mere myths, non-existent.

Your correspondent "Harry," writing of his experience in photographing prisoners, says, "Of any notorious criminal you can take an extra negative or two, make a copyright," &c. Allow me to inform him that, in so doing, he would be acting illegally. A photographer was employed by Captain Codd, Governor of the House of Detention, to take a negative of "Colonel" Burke, the Fenian leader. The photographer did so, and registered the copyright. Burke, prior to his trial, assigned all his rights. When the portrait was published, Burke's assignee, by his solicitors, served the photographer with a judge's summons to show cause why the entry on the register should not be expunged. The matter was argued before the judge, and he made an order to expunge the entry, and required the photographer to give up the negative and all copies in his possession, and also to pay the costs of the application. As in this country the law is no respecter of persons, doubtless if the portrait of Mr. W. Sikes were taken without his consent, upon that individual making application to a judge; he would obtain an order suppressing the obnoxious carte. The Secretary of State some time since issued an instruction to governors of prisons requiring portraits of prisoners to be taken. The legality of so doing is open to question; in the case quoted the judge was decidedly against it.

With reference to the letter from Mr. Brall, I have only to say that, during an experience of twenty-five years in the purchase and sale of engravings, it so happens that I have never applied to individuals for unlettered proofs; my purchases of such have always been at public auctions. No case has yet been tried in a Common Law Court, in which the question of unlettered proofs destroying the copyright would arise.

In the case quoted by Mr. Brall, Lloyds *v.* Asbford, the proceedings were in equity for an injunction, a very different matter to an action for damages, and V.-C. Kindersley's decision was just one of those that, upon appeal, would probably have been reversed. Against his opinion I may quote that of Lord-Chancellor Chelmsford. Speaking of copyright in engravings, he says:—"In order to obtain that privilege, it was requisite that *each* engraving should bear the name of the proprietor and the date of first publication, which requirement was, of course, not fulfilled in the case of artist's proofs and proofs before letters."

An action was once brought by a publisher against a country dealer for selling a copy of Landseer's "Time of War," but, on finding that the defendant was in possession of an unlettered proof, he wisely dropped the action, and paid the defendant £40 for costs.

Until recently, publishers were in the habit of issuing, not a small number of unlettered proofs, but of some thousands, stamped with the stamp of the Printsellers' Association, and, therefore, sold with the full knowledge of the publishers. What must be thought of the morality of those men who, after renouncing copyright by the issue of unlettered proofs, afterwards endeavour to levy black mail from those persons who may have have copied them, although they are published anonymously, and, for anything that appears on the face of them, might have been issued from Central Africa or Cochin China?—I am, sir, your obedient servant,

London, December 14th, 1870. J. Cunnington.

Sir,—I am sorry my last letter reached you too late for insertion in the current number. I hope you will allow me to add a few remarks upon the letter of "Justitia," the writer of which appears to have read my letters very carelessly. I have made no claims, consequently his proposal to decide upon them is unnecessary. I should like to know where, in my letters, he finds reason to conclude that I "wish to infringe the alleged copyrights of certain publishers." I thought I had clearly stated the proposition the truth of which I seek to establish. It is simply this, that certain persons have been convicted, amerced in heavy fines, and imprisoned, when they had not committed any legal offence, and that it is to the public danger that such a state of things should exist. It is useless to moralize upon the matter, because I am arguing solely the legal points. Several persons have written to you, but not one of them has endeavoured to controvert my arguments. "Justitia" says that I "take no higher ground than this—the law of copyright is involved in some technical difficulties, and some points of it are dubious." I have never taken any such ground. The law, on the contrary, is clear and explicit, so far as the conditions upon which the privilege of copyright is to be obtained. Will "Justitia" be good enough to mention what are the technical difficulties and the dubious points? "Mr. Cunnington's whole object is to defeat a righteous law." Not so; my object is rather to show that the owners of copyright have defeated the law by not complying with its simple provisions. The last paragraph of "Justitia's" letter excited my curiosity, and I went through the mud two miles out of my way to satisfy it, expecting, in Mr. Knight's window, to behold at least a strong eruption of "Railway Stations," "Last Kisses," and, perhaps, "Isabella with her Pot of Basil." I was disappointed; the window had its wonted aspect: two or three copies of American works, some copies of old engravings that never were copyright, and a few portraits of Spurgeon, Mabel Grey, and other celebrities, constituted the display. "Justitia" advises you, Mr. Editor, to go and do likewise. Take *Punch's* advice to those about to marry: "Don't;" it will not repay you for the trouble. Perhaps "Justitia" is a friend of the "Red Rover," and by his letter slily seeks "to give him bold advertisement." Next week Tabernacle Walk will be the resort of piracy buyers and pirate hunters, who have been rather busy for the last two months. During the two years and eight months that I have interested myself with regard to the administration of the law of copyright, some things have been "hunted out" by me which "Justitia" may think to be "minute grooves," but which, in the estimation of your readers, may possess larger dimensions. I allude to the entry upon the register of copyright in pictures sold before the passing of the Act, and the sending of men to prison for the infringement of such non-existent copyright; the entry of agreements made between persons who, at the date thereof, were unknown to each other, and which agreements, in fact, were never made; the entry of a photograph made in a foreign country by a foreign artist, and procuring thereby the conviction of an ignorant defendant, and the infliction of penalties to the amount of £[illegible]0. These form a small sample of the "minute grooves" that have come under my notice. What does "Justitia" think of their magnitude?—I am, sir, your obedient servant,

London, December 20th, 1870. J. Cunnington.

THE SPLITTING OF VARNISH FILMS.

Dear Sir,—I have noticed of late that several of your correspondents have complained of the varnish film "splitting." I have about one thousand plates in my boxes, many of which have been varnished fourteen or fifteen years, and often printed from. They are all intact, and as free from blemish as when varnished. Surely the fault must be in the varnish! I have used Ponting's and Fry's for the plates referred to; and, of late, Schmerl and Ellis's negative.—Yours, faithfully,

An Amateur.

DISSOLVING VIEWS WITH ONE LANTERN.

My Dear Sir,—In your last News appears a letter from Mr. Powell, in which he asks your opinion as to the desirability of bringing before the public a method of producing dissolving views with one lantern. As you have not appended your opinion, I will, with your permission, give him mine, which is, "Don't." It will, I need scarcely say, turn out a complete failure. In the first place, the mounting of the back picture must pass behind the first one, and its image be cast on the screen, which will entirely mar the effect of both; and in the next place, the back view will be out of focus to the extent of two thicknesses of glass. Mr. P cannot have tried the proposed plan before publishing it, or he would not, I am sure, have done so.—Believe me, yours very truly, BAYNHAM JONES.

December 27th, 1870.

HARRISON'S HEAD-REST.

DEAR SIR,—Every photographer using my rest, on seeing the drawing by Dr. Vogel in your issue Dec. 9th inst., will perceive that either I have copied from Mr. E. L. Wilson, of Philadelphia, or he has done me the honour of adopting my swivel head-rest, and adorning it with his name. It is, therefore, necessary, in justice to both parties, that you should allow me o assert my claim to publication May 10th, 1867.—Yours, ruly, JAMES HARRISON.

Leeds, December 21st, 1870.

Talk in the Studio.

PHOTOGRAPHY FOR WAR DESPATCHES.—Photography continues to play an important part in the war. Paris is said to contain 1,400 trained pigeons, so that there is a prospect of obtaining news by this means as long as the siege lasts. On the 17th ult. a pigeon arrived from Tours with a small sheet of paper, on which a Government despatch and 116 private letters were photographed in microscopic characters.

HOW TO EFFECTUALLY SEPARATE CHLORIDE OF GOLD FROM ACETATE OF SODA —Mr. Rejlander says :—"I had an acetate toning-bath, in a recent frost, in a large bottle. The fluid froze into one lump of ice, but the little gold it contained floated on the top, yellow and clear, refusing to be affected like the acetate, and was poured off in the condition it was put in, minus of what had been taken up by silver prints.

AN INTERESTING PHOTOGRAPHIC ALBUM.—Among the things which the Empress most deeply regrets having left behind her, in the hurry of her departure from Paris, was a photograph album, which she had received from the Queen, and which contained the royal donor's autograph and a selection of interesting portraits. Hearing of the loss, the Queen immediately gave order for the preparation of another album, which will take the place at Chislehurst of that which has been lost; the inscription and the cartes-de-visite being as nearly as possible the same as those which imparted so much value to the gift left at the Tuileries.

EDUCATION AMONGST PHOTOGRAPHERS.—Can the new Education Board deal with the following literary triumphs, which decorate the front of a shop in Lower Kennington Lane? "A photographic camera and all the materials of *a* artiste for sale;" also, "Waste paper bought in large quantyties."—*South London Press.*

"THE RAY SOCIETY."—The Photographic.—*Punch's Almanac.*

PRECIPITATION OF CHLORIDE OF SILVER.—Photographers know that it is sometimes difficult, when a small amount of silver is present in a large amount of washing water, to get the precipitate formed on the addition of salt to settle, having a tendency to remain in suspension, simply making the water turbid. Besides the well-known action of nitric acid in throwing down the precipitate, Mr. H. T. Anthony says that milk of lime is useful. He observes, "The precipitation of the finely divided chloride of silver that is formed when salt is added to the washings of sensitized albumen paper can best and most rapidly be effected by the addition of a small quantity of the milk of lime to the liquid. In our experience the addition of a quarter of a tumblerful of the lime is sufficient to precipitate the chloride in the course of two days. The milk of lime is prepared by treating quicklime with water enough to make a quite fluid mixture. It should be used freshly prepared."

To Correspondents.

*** THE TITLE PAGE and PREFACE to the present volume of the PHOTOGRAPHIC NEWS will be given with our next.

B. R., eferring to the recent correspondence on copyright and piracy, remarks: "To ninety-nine per cent of the readers of the PHOTOGRAPHIC NEWS it has not the slightest interest, to say nothing of monopolizing valuable space by useless arguments, and infringing too unreasonably on the good-nature of the Editor. The mass of photographers," he adds, "have neither interest in nor connection with pirates and infringers of copyrights." We fully believe him in the last quoted remark; but, unfortunately, photographers, as a community, cannot separate themselves from their art, and as it is used for piracy, piracy must be suppressed, but suppressed with due regard to law and the well-being of the community. Hence it becomes the duty of a journal devoted to photography to permit the fair discussion of the points at issue. We must confess it tries our patience when permitting discussion of the general we are compelled often to repress a tendency to indulge in petty personal matters. This we shall check as much as possible, and also all unnecessary dissertation on the general question. Our correspondent is thanked for his good wishes and suggestions, which shall be remembered.

B. A.—You will find many formula for plain salted paper in the volumes you possess. In the last volume you mention, that for 1869, you will find several articles on the subject. Here is a formula:

Water	2 ounces
Chloride of sodium	10 grains
Gelatine	1 grain
Citric acid...	1 ,,

Float good plain paper on this, and silver on a 40-grain bath. 2. As a rule, there is no danger of exciting various kinds of collodion in the same negative bath, but as we cannot say with certainty what substances may be contained in mady good commercial collodions, it is not wise to risk the condition of a good bath without trying on a small scale first. 3. The formula to which you refer is a good one. The object of adding the sensitizing salts direct to the plain commercial collodion, instead of first dissolving them in alcohol, was to secure a collodion of good body. If you wish for such a collodion, pursue a similar course; if for a collodion of the usual body of the commercial sample, then dissolve the salts in the proper proportion of alcohol. The object of a good body is chiefly to secure a vigorous image by simple iron development. 4. Much difference of opinion exists as to the most sensitive iodizer. The chief advantage of iodide of cadmium is, that collodion iodized with it retains its sensitiveness more perfectly than when an alkaline iodizer is used.

SILVER BATH.—The crystals in your paper were simply a little black powder when they reached us, from which we could form no opinion. Try diluting the collodion with a little plain collodion; this sometimes proves a remedy for pinholes. As you will find noted in our recent article on purifying pyroxyline, pinholes sometimes proceed from other causes than excess of iodide of silver in the bath. We see no reason to suppose that the dark room has anything to do with the matter.

M. J. S.—The stains on your print are caused by the unfixed sensitive paper or print coming into contact with hyposulphite—most probably from the printer's fingers having been touching hyposulphite solutions during the progress of printing and handling the prints. The manipulations of the printing should be conducted with strictly clean hands, and no contact with hypo should be suffered until after all the prints of the day are toned.

M. DEAN.—The YEAR-BOOK will be sent when ready.

C. A. FERNELY.—The print is very nice. Thanks.

E. MARSHAM.—Thanks. In our next.

J. CUNNINGTON.—The pressure on our space compels delay of matter not of current importance. We shall have pleasure in giving due publicity to the facts and arguments which affect the general question, but must request the avoidance of irrelevant or personal matters some of which we have had to cut from recent letters.

DISSOLVING VIEWS WITH ONE LANTHORN —Mr. Powell calls our attention to an error in the printing of his letter in our last. Instead of the "camera" should be 10 inches long, &c., read, the "carrier" should be 10 inches, &c.

COL. STUART WORTLEY.—Thanks. In our next.

FOGGY.—The subscription to the NEWS from the office is 3s. 10d. per quarter in advance. Your letter arrived too late for answers to other questions this week. In our next.

LIEUT. DE W. ABNEY, THOMAS BARRETT, and several other Correspondents in our next.

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INDEX.

ACCELERATING exposure by red and yellow light, 141, 412, 421, 470, 493, 518, 567
Acceleration of exposures, by M. Carey Lea, 402
Acceleration of exposures, by Wm. Blair, 17
Accelerator in the collodion, by M. Louis Terragoo, chloride of aluminium as an, 169
Accelerator, gallic acid as an, in collodion, by S. Beverley, 100
Accelerators in collodion, experiments and suggestions, 109
Acetate of iron, 563
Acetate of silver under the influence of iodine and a high temperature, decomposition of, 24
Acetic acid, impure, 497
Action of bromine upon ether, 46
Adam-Salomon's bust of Niepce de St. Victor, 362
Æsthetics, photographic, 131
Albert and Woodbury process, M. Grasshoff, 602
Albert presentation print, 275, 289, 314
Albert process, the, 28, 140, 257, 275, 276
Albertype, M. Krone on, 381
Albumen as a preliminary coating, iodized, 375
Albumen as a preliminary coating for dry plates, by Hermann Krone, 54
Albumen coated plates, tunicare, by S. Fry, 548
Albumen for first coating, 78, 79, 586
Albumen in the wet process, by J. Grasshoff, preliminary coating of, 378, 401
Albums for card and other portraits, 577, 596
Album, interesting photographic, 618
Albuminized paper, permanent sensitive, 68
Albuminized paper, by Fritz Haugk, on durable sensitive, 291
Albuminized paper, matt, 472
Albuminized paper, tinted, 2 8
Albuminized prints, by Oskar Pfieffer, cracks and flaws in, 173
Albuminizing of glass plates, by Paul Harmsen, the, 436
Albuminizing the plate, by Jex Bardwell, 473
Alcohol, percentage of water in, 246
Alcohol, test for impurities of, 47, 155, 299
Alcohol, absolute, action of chlorine upon, 107
Alcoholic collodion as a varnish for negatives, 209
Alcoholic collodion for hot weather, 188
Alkaline development, by M. Carey Lea, 390
Alkaline nitrate bath, the, 50
Alum in the printing bath, 436
Amateur Photographic Association, 10, 106, 263, 597
America, a German estimate of photography in, 392, 400
America, by Dr. Vogel, photography in, 437, 449, 533, 585, 609
America, the emigration of photographers to, 591
America, new printing process in, 449
America, photographer's reception room in, 332
America, photography in, 4, 11, 28, 434
America, status of photographers in, 479
American and European exhibition, 353
American copyright in photographs, 374
American correspondence, 11, 28, 52, 87, 112, 122, 133, 148, 184, 209, 231, 256, 279, 317, 328, 384, 387, 424, 447, 470, 496, 519, 555, 567, 603
American exhibition of photographs at Cleveland, 383
American National Photographic Association, annual convention of the, 311, 313, 316
American photographic discovery and progress, 219
American photographs, examples of, 277
American photography, by Dr. H. Vogel, 523
American solar enlargements, 447
American studio, a quaint, 191
American studios, 184, 208
American Local Photographic Society, 491
Ammonia-nitrate printing process for plain paper, Kruse, 79
Ammonia-sulphate of iron as a developer, 555
Ammonia, washing gun-cotton in, 113
Anderson Elbert, on the latent image, 584
Anderson, Elbert, on the nitrate bath, 427, 442
Anderson, Elbert, on the dark room, 485
Anderson, Elbert, on producing a negative, 534
Aniline colours, the insoluble, 299
Anthony, H. T., a hint to photographers, by, 382
Anthony, H. T., clouds in landscapes, 415
Anthony, H. T, on a permanent toning bath, 305
Anthony, H. T., peeling of the film, by, 211
Anthony, J., M.D, the photographic atelier in 1870, 186
Apparatus, cost of patented, 309, 314, 334, 347
Apparatus for hire, 38, 45, 57, 62, 69
Apparatus for reducing chloride of silver, by A. Liebus, Ph.D., on a new, 271
Apparatus for tourists, 324
Apparatus, second-hand, 334
Application of photography to the production of maps, by Lieut. J. Waterhouse, 347
Applications of photography, minor, 14
Apprenticeship, 491
Army, photographic field equipment for the, 531
Artificial caoutchouc, 144
Artificial light, a new, 290
Artificial light, Monckhoven's new, 52
Art and science claims of photography, the, 55
Art, pictorial and industrial, magazine, 411, 479
Art-professorship, by S. Thompson, photography and the new, 581
Art, reproducing works of, on heliotype as a means, 538, 559
Art-union, a photographic, 579
Artillery experiments, photography for recording, 509, 526
Astronomical photography, 215
Astronomical photography in Boston, 449
Astronomy and photography, 107, 131
Atelier in 1870, by J. Anthony, M.D., 186
Atmospheric perspective, by A. Meydenbaur, on, 451
Australia, photo-engraving in, 11
Autotype Company and their productions, by Wm. Blair, 459
Autotype process, general principles of the, 124
Award to Robinson and Cherrill, 556
Ayres, G. B., how to print photographs in water colours, by, 27
BABY, a property, 144, 146
Background, a circular, 470
Background, alcove, M. Salomon's, 565, 579
Backgrounds and reflectors, by W. Kurtz, on, 355, 450
Backgrounds as aids to light and shade, 469
Backgrounds, concave, 229, 257, 267, 556
Backgrounds, revolving, 503
Backgrounds to photographs at the exhibition, landscape, 563
Backing for dry plates, by M. Carey Lea, non-actinic, 500
Backing plates, on, 603
Baden of Altona, M., on washed and fumed paper, 547
Baker, W. J., negative retouching, by, 174
Baldus's photo-engraving, M., 199
Bardwell, Jex, albuminizing the plate, 473
Bardwell Jex, bichloride of mercury, gelatino-iron solution for intensifying, 428
Bardwell, J. J., dry-plate work, 391
Barometer, a photographic, 491
Barton, John Harvey, description of a new knapsack, 67
Bath, a printing, 396
Bath, a swinging, 364
Bath neutral, by William Bell, to work and keep a nitrate, 440
Baths, doctoring, 333
Baths, flat, for negatives, 325, 347
Baths for printing, by David Duncan, on the utilization of old negative, 424
Baths, renovating old dipping, by Dr. D. Van Monckhoven, 292
Baths, flat *versus* vertical, 347, 370
Berlin process, the, 148, 231
Beverley, S., gallic acid as an accelerator in collodion, by, 100
Beyersdorff, Adolph, photography and wood engraving, 484
Bifacial medallions, combination negatives, and, 82, 95
Bi-medallion portraits, 419, 443
Birds in landscapes, photographing, 11, 45
Birkbeck Institution, photography and, 479
Bishop and photography, the, 455
Black shining varnish, method of producing upon iron a durable, 239
Black platina upon zinc, 335
Blair, Wm., acceleration of exposures, 17
Blair, Wm., direct carbon printing, 378
Blair, Wm., further remarks on carbon tissues, by, 197
Blair, Wm., negatives from negatives, by, 509
Blair, Wm., some chat about the carbon affairs, personal and otherwise, by, 158
Blair, Wm., staining sensitive films, by, 111
Blair, Wm., suggestions for a negative paper process, by, 558
Blair, Wm., the Autotype Company and their productions, by, 459
Blair, Wm., varnishing negatives, 341
Blake, John M., remarks on silver dippers, 320
Blake, John M., stopping development, 473
Blanquart Evrard's, M, history of photography, 40, 74
Bleached lac in varnishes, 9
Bleaching ivory, 492
Blinds, curious, 191
Blistering and slipping in dry-plate work, by M. Carey Lea, prevention of, 429
Bloede, V. G., on the mounting of prints and the chemistry of mounting materials, 211
Boston, astronomical photography in, 449
Botany, photographic illustrations in, 191
Bovey, W. T., a meteorological study, 377
Bovey, W. T., fixing silver prints, 193
Bovey, W. T., instantaneous photography, by, 29, 42
Bovey, W. T., photographic secrets, by, 423
Bovey, W. T., photography and the British Association, by, 497
Bovey, W. T., printing in carbon described in two chapters, 326, 341
Bovey, W. T., Woodbury's photo-mechanical process, by, 531
Bovey, W. T., the ethics of popular exhibitions, by, 570
Bradford, Fine Art Exhibition at, 533
Bristol Photographic Society, 22, 70, 118, 165 214, 455
British Association for the Advancement of Science, 445, 453
British Association, photography at the, 490
Bromine and iodine the production of, 551
Bromine, double salts of iodine and, 293, 314
Bromine soluble in absolute alcohol and ether, by Dr. D. Van Monckhoven, on some new double salts of, 282
Bromide of potassium, 252
Bromide of potassium, researches on its best preparation and composition when pure, 156
Bromide of silver in salts of mercury, solubility of the chloride, iodide, and, 240
Bromide of sodium on a large scale, 252
Bromides of potassium and sodium, on the production of the, 592
Brookes, Wm., landscape photography, by, 8
Brooks *v.* Knight, 550
Brothers, A., a new star atlas, by, 339
Brothers, A., the Holbein Society's facsimile, 194
Brown, J. C., after-intensification of portrait and landscape negatives, by, 103
Brown, John, C., the bulb-syringe applied to photography, 595
Burned out photographers, 239
Burnt-in photographs, by J. Towler, 295, 307
CAMEO-MEDALLION carte-de-visite, by Carl Krziwanek, the, 133, 546
Camera, sun pictures without a, 345
Camera without dark slide, Mr. Gulliver's, 57
Camuzet's researches on collodion, 257
Caoutchouc, artificial, 144
Caoutchouc tubes, permeability of, 47
Captain, the turret ship, 479
Carbon compounds, action of the haloids upon the metallic derivatives of some, 47
Carbon described in two chapters, by W. T. Bovey, printing in, 326, 341
Carbon Eburneum process, 218, 267
Carbon patent, Fargier's, 133, 142
Carbon and photo-lithographic process, 243
Carbon printing, a few words about, 214
Carbon printing, by H. Baden Pritchard, on, 279
Carbon printing, by M. Dupuis, note on, 160
Carbon printing, direct, 358, 378
Carbon printing, new pigmented paper for, 397
Carbon printing, the theory of, 229
Carbon prints, a method of transferring, 517
Carbon prints for publication, 539
Carbon prints, stability of chromated gelatine and permanency of, 182
Carbon process, 267
Carbon process, a new, 243, 267
Carbon process, by Dr. Liesegang, notes on, 523
Carbon process, by Leon Vidal, on the protection of negatives by the, 212
Carbon process, its process, economy, and permanency, 1t0
Carbon process, latest improvements in, by J. R. Johnson, 124
Carbon process, license for, 267
Carbon process, manipulations of Johnson's, 213, 224, 233, 246, 259, 272, 286
Carbon process, Mr. Johnson's recent demonstration of the, 122
Carbon process on a large scale, the, 504
Carbon process, some chat about, personal and otherwise, by Wm. Blair, 158
Carbon process, Swan's, 128, 231
Carbon process, the position of the, 170
Carbon *v.* silver printing, 153
Carbon tissue, by J. R. Johnson, improvements in preparing, 394, 397
Carbon tissue, by M. Gobert, on the preparation, printing and transfer of, 258
Carbon tissues, by Wm. Blair, further remarks on, 197
Carbon tissue, durable, by H. B. Pritchard, 580
Carbon tissue, patent right in, 193
Carbonate of silver paper, by Schnauss, 135
Carbutt, J., improved washing tank, 64
Card portraits, the war and popular, 404
Cartographic applications of photography, 183
Caught napping, 179
Caution, 58, 95
Cement, a new, 492, 586, 596, 610

Ceramic photographs, 361, 373, 410
Changes in glass 24
Chemical intensity of light, 191
Chemistry of nature, the, 527
Chemistry of carbon process, by J. Swan, 234
Children's pictures, 466
Chinese lacquer-work composition, 431
Church interiors, 33
Chloral in photography, 419
Chloride, by J. Spiller, F C S., a new organic, 453
Chloride, iodide, and bromide of silver in salts of mercury, solubility of the, 240
Chloride of gold and potassium, by Col. Stuart Wortley, washed and fumed paper, and, 374
Chloride of gold from acetate of soda, to separate, 618
Chloride of silver, by A. Liebus, Ph D., on a new apparatus for reducing, 271
Chloride of silver, precipitation of, 618
Chloralum, 564
Chlorine upon desiccated nitrate of silver, action of dry, by MM. Odel and Vignon, 473
Chromo-photo-lithography, 257
Cleaning, by Dr. Grimm, a substitute for, 54
Cleaning plates, 22, 224, 262, 396
Cleaning plates, by Vulpes, some hints on, 572
Clean plates, by B J. Edwards, how to, 6
Clouds in landscapes, by H. T. Anthony, 414
Clouds in landscape pictures, by Adolf Hubner, on a method of obtaining natural, 210
Cobb, Wm., on making a combined negative, 594
Cockling, to prevent, 145
Collodio-albumen for transparencies, 524
Collodio-bromide manipulations, by M. Carey Lea, 245
Collodio-bromide, M. Carey Lea's, 227
Collodio-bromide solution, by M. Carey Lea, keeping and preparing, 440
Collodio-bromide process, by M. Carey Lea, on the difficulties of the, 161
Collodio bromide process, by M. Carey Lea, 18, 260, 354
Collodio-chloride negatives, 505
Collodio-chloride on the continent, the 276
Collodio-chloride paper, its preparation and employment, by Prof Krippendorf, of Aarau 318
Collodio-chloride process, by John Spiller, 136
Collodio-chloride process, the Simpsontype or, 155, 510
Collodion as a varnish, 267
Collodion, bromo-iodide of silver and ammonium in, 148
Collodion, filtering, by M. Carey Lea, 102
Collodion, chloride of aluminium as an accelerator in, by M. Louis Terragno, 160
Collodion experiments, suggestion, accelerators in, 109
Collodion film, by Prof J. Towler, M.D, enlargements on, 474, 485
Collodion film, ridges in the, 497
Collodion films, transfer of negative, by G. Scamoni, 388
Collodion for preservation of eggs, 240
Collodion for sea sickness, 527
Collodion images transferred to paper, ivory, and wood, matt transferred pictures, removing, 253,
Collodion, gallic acid in, 62, 82, 94, 100, 104, 117 129, 167
Collodion positives in America, 71
Collodion positives on paper, 387
Collodion, O'Neil's formulæ for, 35
Collodion, the preparation of, 368
Colour, experiments in connection with photography in natural, by Wilhelm Grune, 16
Colouring magic-lantern slides, 336
Colouring of small metallic objects, 239
Colouring photographs, improvement in, 329
Coloured prints, remounting, 35
Colour of flowers produced by ammonia, on changes of, 335
Colours, by R. W. Thomas, F.R.S., is it possible to obtain photographs, 606
Colours, photography in, 146, 222, 587
Combination, B. J. Edwards', a new method of, 290
Combination negatives, 131, 146
Combination negatives, by H. Neale, 65
Combination photographs, by a Northern Photographer, 27
Combination printing, 57, 335
Combination printing frames, Edwards's, 333
Combination printing frame, by J. T. Taylor, Edwards's new, 593
Combination printing frame, 610
Combined negatives, 25, 44, 67, 69, 82, 83, 131, 146
Combined negatives, by G. Hemery, improved method of producing, 430
Combined negatives, by Wm. Cobb, some remarks on general applications of photography, with an account of a method of making, 591
Competition and low prices, 189
Compound negatives, by E. Dunmore, 31
Compressed gases, 95
Condensing lenses, focus of, 331
Constant, A. de, flattering portraits, 461
Constant, A. de, on the use of cameras with white interiors, 368
Constant, A. de, questions and suggestions by, 41, 64
Continent, by Lieut. J. Waterhouse, R.A., photography and surveying on the, 426
Continent, notes from the, 340, 350, 369
Copies of maps, photographic, 539
Copper developer, by F. Haugk Lorenz, sulphate of, 488
Copyright, alleged photographic piracies of, 512
Copyright and registration, 530 •
Copyright conviction, 550
Copyright in Canada fine art, 83
Copyright, infringement of, 257
Copyright in photographic negatives, 33
Copyright in photographs, American, 374
Copyright law, new, 387
Copyright, photographic piracy and, 516, 526, 549, 560
Cornwall Polytechnic Society, Royal, 180, 425, 448
Correspondence, photography for, 563
Costly photograph, a, 611
Courtenay, J., on photo printing and heliographic processes, by, 135
Cracks in negative films, 613
Crime, photography and, 311
Criminals, photographing, 206, 209, 226
Coventry, Arthur, glass transparencies, 607
Cyanide poisoning 52, 395, 412, 413
Cyanide sores, 131
Cyanide, suicide by, 395, 412, 443
DANGER of claiming discoveries, 134
Dangerous hair dyes, 47
Daguerreotypes, copying 487
Daguerreotypes, failed, 517, 526
Dark room, by E. Anderson, manipulations in, 485
Dark chamber, mysteries of the, 78
Dark room, by M. Carey Lea, green glass in, 56
Dark room, green glass for, by J. Martin, 150
Dark room, green glass for the, 122, 150, 414
Dark slide, Mr. Gulliver's camera without, 57
Dark tent, a convenient, 244
Davanne, M., notes on the preservation of dry Taupenot plates, by, 367
Davenport collection of prints, the, 47
Davenport, S. T., prints and their production, by, 20, 32, 42, 68, 79, 93, 128, 140, 176
Davies, Sam. J., Dover, by, 99
Declining, is photography? 140
Defaulting sitters, 131, 146
Designs in metal, 144
Destroying a photographer's statue, 371
Developer, a good, 167, 431
Developer, ammonia-sulphate of iron as a, 555
Developer, Lorenz's sulphate of copper, by Fritz Haugk, 488
Developing Liverpool dry plates, 525
Development and redevelopment, by M. Carey Lea, a holder for, 547
Developing process, by M. le Marquis Maison, enlargements by a, 200
Development printing process, 219
Development, by John M. Blake, stopping, 473
Development, a theory of, by J. Stillman, 125
Development, mixed iron and pyrogallic acid solutions for, 49
Development, Stillman's theory of, 143
Diamond in re Paul Pretsch, Dr, 262
Dickens, the late Mr., 288
Difficulties of genre photography, 167
Dippers, silver, by John M. Blake, 320
Dippers, plates slipping off, 299
Dipping baths, by Dr. D., renovating old, Van Monckhoven, 292
Direct carbon printing, 358, 378
Direct prints or enlargements, 375
Discolouration, keeping the printing bath from, 419
Disderi and Co., in re, limited, 599
Dissolving views with one lantern, 611, 618
Disgusted thieves, 119
Distortion, a curious case of, 603
Doctoring baths, 333
Dodges, by Edward Dunmore, 281
Dogs and their photographs, 276
Double bottom in washing troughs, 228
Double printing, a frame for, 288
Double printing made easy and certain, 290
Double salts of iodine and bromine, by Dr. Van Monckhoven, 293
Dresser, Fred., a simple and efficient still, 557
Dress at the November soiree, 482, 502, 518
Drivet's process of lithography, 198
Drunkards, portraits of, 197
Dry-plate process, by Hermann Krone, 533
Dry plates, by M Carey Lea, backing, 592
Dry plates, by M. Carey Lea, non-actinic backing for, 500
Dry-plates, Liverpool, 78, 477
Dry plates, tinfoil for packing, 575
Dry plates, tunicare for, 575, 586
Dry process, by J. F. Plucker, a modified, 441
Dry process, for eone, 199
Dry and wet process, by T. Gulliver, 18
Dry-plate processes, by A. Moll, on the practical value of, 101
Dry-plate process, by Wm. England, remarks on the, 235
Dry-plate processes, one of the very best, 207
Dry-plate processes, the best, 267
Dry-plate work, by J. J Bardwell, 391
Dry-plate work, by M. Carey Lea, prevention of slipping and blistering in, 429
Dry-plates, by Hermann Krone, on albumen as a preliminary coating for, 54
Dry-plates, by John N Sleddon, infusion of quassia as applied to the production of, 210
Dry-plates, by Philip Holland, on the preparation of, 413
Dry-plates, by W. J. Stillman, the Liverpool, 76
Dry plates, commercial, 164
Dry-plates, instantaneous, 323
Dry-plates, Mr. England on, 116
Dry-plates, practical value of, 101, 117
Dry-plates, Taupenot, notes on the preservation of, by M. Davanne, 367
Dry-plates, the most suitable preliminary coating for, 41
Dry process? which is the best, 217
Dull weather, photography in, 104
Dumas and Daguerre, 167
Duncan, David, gathered fragments, by, 161
Duncan, David, on the utilization of old negative baths for printing, 426
Duncan, David, transferring films, by, 7
Dunmore, E., compound negatives, by, 31
Dunmore, Edward, dodges, by, 281
Dunmore, J. L., the camera among the icebergs, 356
Dupuis, M, notes on carbon printing, by, 160
Durand's process of engraving, 184
EARLY photographs, 432
Early use of iron development, the, 81
East, photography in the, 352, 364
Echo on photography, the, 294
Echoes of the month, by an Old Photographer, 14, 62, 110, 146, 219, 267, 313, 362, 412, 482, 518, 579
Eclipse expedition, accident to the, 611
Eclipse expedition, photography and the forthcoming, 566, 598
Eclipse expedition, the, 543, 579
Eclipse, observations on the next solar, 206
Eclipse of 1869, report of the total solar, by T. B. Sands, 98
Eclipse, photographing the protuberances of the sun without an, 519
Eclipse photographs both at home and abroad, 146
Eclipse photographs, the lesson of, 599
Eclipse, the, 587, 613
Eclipse, the Government and the forthcoming, 458
Eclipse, the December, 497, 527, 412, 594, 538
Eclipse, the origin of photography and the coming, 41
Education amongst photographers, 618
Edwards, B. J., a new method of combination, 290
Edwards, B. J., how to clean plates, by, 6
Edwards' combination printing frames, 334
Edwards' modification of Swan's process, 326, 341
Edwards' photo-collographic process, Mr., 6, 283, 341, 372, 409
Effective but offensive, 491
Eggs used in photography, 166
Electric lights as applied to photo-micrography, by Lieut-Colonel J. J. Woodward, magnesium, 320, 330
Electro physiognomy, photography and, 148
Emigration of photographers to America, the, 591
Empty bottles, 335
Enamel paper, by Wil. Grune, 223
Enamel surface on paper photographs, by An Old Hand, how to produce an, 230
Enamel photographs, by J. Towler, 295, 307
Enamels, Lafon de Camarsac's, 137
Enamels, on photographic, 37, 86, 166
Enamelling mounted cards, 202, 214, 219, 227
Encaustic paste and varnish for prints, 349
Encaustic paste which does not smear, 539
England on dry plates, Mr., 117
England, the arrest of Mr., 352
England, Wm., notes on varnishing negatives, by, 32
England, Wm., on the dry processes, 235
Engravings, photographic piracy of, 250
Enlarged negatives, transparencies for producing, 22
Enlargements, American solar, 417
Enlargements by a developing process, by M Le Marquis Maison, 200

Enlargements, negatives for, 251
Enlargements by the magic lantern, 9
Enlargements by magic lantern and paraffine lamp, 22
Enlargements on collodion film, by J. Towler, M.D., 474, 484
Enlargements on canvas by transfer, 337
Enlargements, solar camera, 482
Enlargements or direct printing, 375
Enlarging camera, on the magnesium, 150
Enlarging of photographs with the ordinary camera, 308
Enlarging processes in America, 437
Enterprise for photographic portraitists, 85
Entomology, photography in, 191
Erchard's litho-engraving establishment, 199
Errors of perspective in portrait photography, by Dr. H. Vogel, on, 76, 89, 39, 305
Etching, photography as applied to, 302
Evans, the case of, 501, 503
Exhibiting portraits of defaulting sitters, 146
Exhibition, admission to the, 518
Exhibition at Bengal, 119, 242
Exhibition at Bradford, fine art, 335
Exhibition at Derby, fine art industrial, 1 55 511
Exhibition at Cardiff, 313, 403, 431, 477
Exhibition at Paris, photographic, 303, 314, 435
Exhibition in India, photographic, 71, 119
Exhibition, landscape backgrounds and portraits at the, 563
Exhibition of photographs, 567, 579, 590
Exhibition of photographs and conversazione, 529
Exhibition of photographs at Cleveland, American, 185, 383
Exhibition, retouched prints at the, 562
Exhibitions, by W. T. Bovey, the ethics of popular, 570
Ethnology, photography and, 395
Exhibition and future improvements, 579
Exhibition of photographs at Conduit Street, 21, 481, 501, 5 8, 524, 54 , 552, 553, 555
Exhibition of photographs, lantern, 107
Exhibition of the U. S. Association, 26, 87, 113, 209 239, 279, 317
Exhibition and photographic lecture, 107
Exhibition, packing at the, 596
Exhibition, retouching at the, 559
Exhibition, the French photographic, 6, 255
Exhibition, the press and, 544, 557
Exhibition, annual international, 181, 395, 412
Exhibitions, American and European, 353
Exhibitions, photographic, 501, 519
Exposures in the camera, shortening, by M. Carey Lea, 615
FACIAL expression, 47
Faded Daguerreotypes, 517
Fallacious proportions and photography, 144
False rumour, a, 155
Family friend, the, 270, 412
Fargier's carbon process, 133, 143
Fast painting, 395
Female labour in photography, 146, 164
Female photographers, 142
Fern leaf marks on negatives, 333
Ferrotypes, 123
Field equipments, photographic, 494, 531
Field manipulation, simplified, 35
Film, the transfer of the collodion, 495
Films splitting, tunicare to prevent, 563
Filtering collodion, by M. Carey Lea, 102
Fingers, to remove silver stains from the, 396
Fire by a solar camera, studio set on, 52
Fire in a photographic studio, 131
Fitt, Robert, vignetting photographs, 53
Fixative for drawings, 155, 51
Fix drawings in pencil, 155, 514, 525, 562
Fixing bath, toning in, 160
Fixing prints, time for, 458
Fixing silver prints, by W. T. Bovey, 195
Flat baths for negatives, 325, 347
Flattery, photography and, 129
Flattering portraits, by A. de Constant, 461
Flat *versus* vertical baths, 347, 370
Flies, no, 468
Fluoride in photography, 37, 87
Focus of condensing lenses, 331
Forbes's formula for negatives, 78
Foreign miscellanea, 5, 51, 112, 171, 220, 267, 363, 386, 435, 458, 508, 554, 602
Fog, 579
Frame for double printing, a, 288
Frame for sensitizing photographic paper, 447
Frames, Edwards' combination printing, 334
Free trade in photography, 188, 219
French patents in Alsace, 483
French Photographic Society, 34, 70, 106, 166, 202, 251, 359
Fry, Samuel, albumen coated plates, &c., 548
Fulminating gold, explosion in, 191
GAPSHILL PLACE, a souvenir at, 395
Gallic acid in collodion, 62, 82, 94, 100, 104, 117, 129, 167
Gases, compressed, 95
Gas explosion, 148
Gas-tight rubber tubes, 215
Gelatine paste, 212
Gelatine, prints from, 140
Gelatine, the purification of, by Dr. Julius Stinde, 237
Gelatino-iron solution for intensifying, by Jex Bardwell, bichloride of mercury, 428
Geology, photography as an aid to, 567
German estimate of photography, American, 392, 400
Germany, by Dr. H. Vogel, photography in, 114, 222, 257, 569, 582
Gibbs, W., on liquids of high dispersive power for prisms 614
Gillo, Robert, lighting the sitter or producing effects in portraiture only, by, 7
Glass, a new method of cleaning, 396
Glass, changes in, 24
Glass dippers, 597
Glass dippers, how to save your, 588
Glass for negatives, 457
Glass for negatives, selecting and preparing, 343
Glass houses in America, 437
Glass plates, by Paul Harmsen, the albuminizing of, 436
Glass plates, on cleaning, by W. Grune, 224
Glass room, comfort in the, 81
Gleanings from daily work, by Stellar Polaris 51, 99, 150
Glue and glycerine, 611
Goal, photography in, 338
Gobert, M., on the preparation, printing, and transfer of carbon tissue, by, 258
Gold and potassium, by Colonel Stuart Wortley, chloride of, washed and fumed, 376
Golden syrup, 21, 263
Gold from old toning baths, recovery of, 105, 300
Good plan, a, 215
Government and science, the, 518
Graphotype for producing printing surfaces, by E. Rosser and G. Shaw, photography and, 405
Grasshoff, Johannes, the lime toning bath, 472
Grasshoff, Jules, portraits and pictures, 271
Grasshoff, J., coating with albumen, 401
Grasshoff, J., preserving prints from discolouration, 89
Grasshoff, J., the retouching of negatives, by, 133, 399
Grasshoff, J., the so-called American wet albumen process, by, 379
Graver, untouched by the, 309
Greek brigands, portraits of, 219, 228
Green glass for dark room, by J. Martin, 150
Green glass for dark room, by M. Lea, 56
Green glass for the dark room, 122, 444
Green *v.* yellow glass, 82
Griggs, photo-lithographic facsimile, by, 27
Grip, the photograph of, 362
Grit varnish, 364
Ground glass, negatives on, 28, 113, 121, 145
Ground glass, printing through, 26
Group, an unusual, 155
Grune, Wilhelm, cleaning glass plates, by, 224
Grune, Wilhelm, enamel paper, by, 222
Grune, W., experiments in natural colours, 16
Grune, W., transferring of photographs to various surfaces, by, 249
Grune's method of producing ceramic photoraits, 373, 410
Guides to tourists, photographic, 395
Gulliver, T., photographic rambles in South Wales, 280, 302, 316 379, 394, 412, 461, 472
Gulliver, T., wet and dry process united, 18, 45
Gulliver's camera without dark slide, Mr., 57
Gulls, 82
Gurney and Son's studio, Messrs., New York, 208
Gutta-percha vessels for chemical use, 191
Gum-arabic and starch paste, 212
Gum plates, keeping qualities of, 11
Gum tragacanth paste, 212
Gun-cotton, a new discovery concerning, 228
Gun-cotton in ammonia, washing, 113
HAIL-STORM in Philadelphia, 256, 328
Hæmatoxyline in photography, by Dr. C. Tabensky, on the use of, 55
Halation in eclipse photographs, chemical, 3
Haloids upon the metallic derivative of some carbon compounds, action of the, 46
Harmsen, Paul, the albuminizing of plates, 436
Harrison's head-rest, 618
Haugk, Fritz, Lorenz's sulphate of copper developer, by, 488
Haugk, Fritz, of Brunswick, durable sensitive albuminized paper, 2 1
Hawks and pigeons, 539
Hart, the Prussian spy, 455
Headrest, by J. Anthony, clamping the, 592
Heat and absence of actinism, 358
Hemery, G., improved method of producing combined negatives, by, 430
Healing, photographs with the gift of, 255
Heliotype in Rome, 564
Heliotype, 611
Heliographic processes, by J. Courtenay, photo-printing and, 136
Heliotypy as a means of reproducing works of art, 538, 559
Henderson's enamels, Mr., 47
Hint to photographers, by H. T. Anthony, 382
Hint to make reversed negatives, a, 470
Hire, apparatus for, 38, 45, 57, 62, 69
His photograph, 299
History of photography, M. B. Evrard's, 49, 74
Hypo and gold toning bath, the, 294
Holder for development, by M. Carey Lea, 547
Hood, Tom, on photography, 376
Hot weather, alcoholic collodion for, 188
How to produce an enamel surface on paper photographs, by An Old Hand, 230
Hubbard's "Stolen Moments," Mr., 35, 47
Huhner, Adolf, on a method of obtaining natural clouds on landscape pictures, 210
Hughes, Jabez, the principles and practice of photography, 269
Hydrogen gas, method of producing, 612
Hypo, be sure to remove the, 383
Hyposulphite, by C. R. A. Wright, B.S.C., F.C.S., note on the action of iodine on the, 152
Hyposulph. of soda, sensitive test for, 491, 554
ICEBERGS by J. L. Dunmore, camera among, 356
Illegal photographic lotteries, 59
Illuminating stop, acceleration by light, an, 470
Incentives to progress, 22, 46
Indecent photographs, 59, 95, 107, 119, 130, 323, 384, 482, 501, 551
India, photographic exhibition in, 71, 131
India, photography and fine art in, 468
India-rubber for mounting, 384
Individuality, by Max Petsch, 462
Informers and piracies, 413
In memoriam, 111
Iodide and bromide of silver in salts of mercury, solubility of the chloride, 240
Iodide of potassium, alleged poisoning with, 11
Iodide of silver from old bath, removal, 62
Iodide of silver, by Dr. J. Schnauss, on the, 572
Iodide, soluble double, 276
Iodine, 514
Iodine and bromine, by Dr. Van Monckhoven, double salts of, 282, 293
Iodine and bromine, double salts of, 314
Iodine on hyposulphite, action of, by C. R. A. Wright, B.S.C., F.C.S., 152
Iodine, production of bromine and, 551
Iodine, recovery of, from substances which contain that element, 611
Instantaneous dry plates, 323
Instantaneous photography, by W. T. Bovey, 29, 42
Intensification, 87
Intensification of portraits and landscapes, by J. C. Browne, after, 102
Intensifier, bichloride of mercury as an, 424
Intensifier for negatives and diapositives, the uranium, 592
Intensifier, permanganate, 299
Intensifier, pyrogallic and citric acid, 52
Intensifying, by K. Schwier, 382, 388
Intensifying, by Jex Bardwell, bichloride of mercury, gelatino-iron solution for, 428
Intensifying, modes of, 332
Intensifying, platinum for, 446
Intensity, by M. Carey Lea, reduction of, 499
Iodized albumen as a preliminary coating, 375
Iron and pyro, 256
Iron and pyrogallic acid solutions for development, mixed, 49
Iron developer, sulphate of copper in, 82
Iron development, the early use of, 8
Iron, tinning, without the aid of heat, 299
Italian photographs, Mr. Ruskin and, 83
Ivory bleaching, 492
Ivory, wood, &c., matt transferred pictures, removing collodion from images transferred to paper, 253
JACK-OF-ALL-TRADES, a, 239
Janicot, C., photographs on textile fabrics, 524
Jeanrenaud, M., method of detaching the film of a negative from the glass plate, by, 415
Jessen, C. F., the Lichtdruck process, by, 92
Johnson, J. R., improvement in preparing carbon tissue, 394
Johnson, J. R., latest improvement in the carbon process, 122
Johnson's carbon process, manipulations of, 224 233, 246, 259, 272, 286
Johnson's demonstrations of carbon process, 122
Judge's opinion of photographs, a, 144
KEEPING negatives, 114
Keeping prints white during long exposure, 130
Keeping qualities of gum plates, 11
Keeping the bath from discolouration, 19
Kent, J. H., suggestions on posing, 404
Kew committee, report of the, 453
Kew observatory, photography at, 457, 489
Kilburn Brothers' stereo establishment, 184

Knapsack tent, by William Harvey Barton, description of, 67
Krippendorf, Professor, collodio-chloride paper, its preparation and employment, 318
Krone, Hermann, on albumen as a preliminary coating for dry plates, by, 54
Krone, Hermann, on dry-plate processes, by, 536
Krone on Albert-type, M., 381
Kruse's ammonia-nitrate printing process for plain paper, 79
Kruger, H., on the splitting of varnished films, its cause and prevention, by, 604
Kurtz's background, 257
Kurtz, backgrounds and reflectors, 355, 450
LABORATORY accident, 347
Lac in varnishes, bleached, 9
Lacquer work, composition of Chinese, 431
Landscape backgrounds to portraits at the exhibition, 563
Landscape photography, by Wm. Brooks, 8
Landscapes, atmospheric effect in, 62
Landscapes, by H. T. Anthony, clouds in, 414
Lantern accident, 132, 185
Lantern, dissolving views with one, 611
Larkin, H., and William White, preparing magnesium and its chloride, 91
Lavatory, beware of the photographer's, 335
Law, photography and, 518
Lea, M. Carey, acceleration of exposures, 402
Lea, M. Carey, a holder for development and redeveloper, 547
Lea, M. Carey, alkaline development, 390
Lea, M., collodio-bromide manipulations, by, 245
Lea, M. Carey, filtering collodion, 102
Lea, M., green glass in the dark room, by, 56
Lea, M. Carey, keeping and preparing collodio-bromide solution, by, 440
Lea, M., local reduction of intensity, 500
Lea, M. Carey, manipulation of negatives, wet and dry, by, 474
Lea, by M. Carey, backing for dry plates, 500, 592
Lea, M. Carey, prevention of blistering and slipping in dry-plate work, 429
Lea, M. Carey, on the source of the difficulties
Lea, M. C., shortening exposures in camera, 615
presented by the collodio-bromide, by, 161
Lea, M. Carey, the collodio-bromide process, 200
Lea, M., the chloro-bromide process, by, 18, 354
Lea, weighing and measuring, by 260, 402
Lea's collodio-bromide process, M. Carey, 227
Lead-pencil for strengthening negatives, 82
Lead-pencil for working on negatives, 394
Lectures on photography, 59, 62, 611
Lenses, focus of condensing, 331
Lens, action of apérture of, 257
Let me see the face, 419
Libels, photographic, 143
Licence, carbon printing, 267
Lichtdruck, 83
Lichtdruck and Woodbury process compared, by H. Baden Pritchard, 398
Lichtdruck, by H. B. Pritchard, what is, 423
Lichtdruck, Dr. Van Monckhoven on, 449
Lichtdruck printing, the practice of, 419
Lichtdruck process, by C. F. Jessen, the, 292
Lichtdruck processes, details of the, 204
Liesegang, Dr., notes on the carbon process, 523
Liesegang, P. Am., Ph. L., photographic notes on new and old processes, 122
Liesegang, Dr., proposal of a standard system of plate sizes, by, 230
Liesegang's description of a process after Salomon, 189
Light, and how to manage, the, 231
Light and shade, backgrounds as aids to, 469
Light, a new artificial, 290
Light, intensity of, at different altitudes, 191
Light for the dark chamber, 87
Light, Monckhoven's new artificial, 52
Light reflected from the back of plates, 122
Light side, or front light, 13, 34, 45, 122
Light printing process, the Rye, 387
Light, Professor Tyndall on, 465, 475
Light, windows in studios and sources of, 62
Lighting and studio, 212
Lighting, M. Adam-Salomon's mode of, 469, 565, 579
Lighting the sitter, aids to, 390
Lighting the sitter, or producing effects in portraiture only, by Robert Gillo, 7
Lilliput an newspaper, a, 599
Lime toning bath, by Johannes Grasshoff, 472
Literary gathering at Sidcup, 345
Liverpool Amateur Photographic Association 58, 105, 166, 214, 275, 322, 371, 418, 479
Liverpool dry plates, 477
Liverpool dry plates, by W. J. Stillman, 78
London Photographic Society, 23, 70, 73, 91, 107, 118, 166, 179, 190, 215, 226, 276, 286, 598
London, photographs of, 527
London water, 57
Looking well as a photograph, 119
Lorenz's sulphate of copper developer, by F. Haugk, 488
Low prices and degeneracy, 338
Low prices, competition and, 189
Luynes, the Duc de, 578
Lyon's, Capt., notes on photographs of Southern India, by, 270
MAGIC lantern, enlargements by the, 922
Magic lantern pictures on gelatine by a new method, 335
Magic lantern slides, colouring, 333
Magic lantern queries, 81
Magnesia burner, new, 203
Magnesium and electric lights as applied to photo-micrography, by Lieut-Colonel J. J. Woodward, 320, 330
Magnesium and its chloride, by H. Larkin and W. White, preparing, 91
Magnesium enlarging camera, 150
Maison, M. le Marquis, enlargements by a developing process, 200
Manchester exhibition, 106, 129, 141
Manchester Photographic Society, 46, 107, 130, 443, 514, 548, 611
Manipulation of negatives, wet or dry, by M. Carey Lea, 474
Manipulations in photography, acquiring new, 349
Mann, M.D., F.R.A.S., on stereograms of the planet Mars, 200
Mars, on stereograms of, by R. J. Mann, 200
McLachlan's modification, 273
Maps, by Lieut. J. Waterhouse, R.A., application of photography to the production of, 345
Marks on negatives, fern leaf, 333
Mawson and Swan's, robbery at, 95
Marseilles Society, 69, 179, 275, 395
Martin, J., green glass for dark rooms, 150
Masks to negatives, attaching, 251, 258
Mason, Josian, 264
Matt transferred pictures, removing collodion from images transferred to paper, ivory, wood, &c., 253
Mayall's studio, robbery at Mr., 227
Measuring, by M. C. Lea, weighing and, 260, 402
Measuring drops, bottle for, 616
Measuring microscopic objects, photo. in, 173
Mechanical means, the acquirements of excellence by, 209
Mechanical printing, photo, 2, 62, 165, 117, 130
Mechanical printing, by J. Vincent Robinson, photo, 90
Mechanical printing process, new, 217, 219
Mechanical printing process, progress of, 110
Mechanical printing processes on the continent, by Lieut. J. Waterhouse, photo, 189, 224, 236, 247, 285, 389
Medallion portraits, cameo, 133
Medals for discovery and invention, 62
Medal, a hint for a, 167
Meinerth, mezzo-tint process, 243
Metallic derivatives of some carbon compounds, action of the haloids upon the, 46
Metallic objects, colouring small, 237
Metals, designs in, 144
Meteorological study, by W. T. Bovey, 377
Metrical system, the, 239
Meydenhaur, atmospheric perspective, 451
Mezzotinto process, the, 241
Micro-photography, contributions to, 191
Military photography, 452
Miniature apparatus for tourists, 324
Moll, A., The practical value of dry-plate processes, by, 101
Molecular movement, 203
Molecular physics, curious facts, 221
Monckhoven, Dr. Van, double salts of iodine and bromine, by, 293
Monckhoven on Lightdruck, Dr. Van, 449
Monckhoven, Dr. D. Van, on renovating old dipping bath, 292
Monckhoven, Dr. D. Van, on some new double salts of iodine and bromine soluble in absolute alcohol and ether, by, 282
Monckhoven's new artificial light, 52
Monckhoven's reply to Mr. Barrett, Dr., 10
Monkey, a marvellous, 72
Moon, a remarkable picture of the, 431
Moonlight and sunlight effects, photographs by, 307, 385
Moonlight, photo[illegible]hs by, 95, 105, 407, 431, 476, 482
Moonlight pictures, 407, 418, 419, 430, 431, 483 595
Moonlight pictures and rapid plates, 563
Moonlight pictures and relative intensity of sunlight and moonlight, 412
Mountain climbers, photography for, 75
Mounting cements, hints on, by B. L. S., 173
Mounting, india-rubber for, 386
Mounting, 35, 173, 299
Maps, photographic copies of, 539
Mounting material to prevent cockling, 145
Mounting photographs, rice paste, 431
Mounting of prints and the chemistry of mounting materials, by V. G. Blœde, 211
Mounting photographic scraps, 180
Mounting transparencies, paper matt for, 23
Nadar's balloon and the war, 443
National records, photozincographs of, 419
Natural clouds on landscape pictures, by Adolf Hubner, on a method of, 210
Neale, H., combination negatives, 65
Nearly saved by a photograph, 514
Negative baths for printing, by David Duncan, on the utilization of old, 424, 426
Negative baths for printing, old, 61
Negative paper process, by Wm. Blair, 556
Negatives, a hint to make reversed, 470
Negatives, attaching masks to, 251
Negatives by the carbon process, by Leon Vidal, on the production of, 212
Negatives, by Wm. Blair, varnishing, 341
Negatives for enlargement, 251
Negatives from negatives, 509, 526
Negatives, lead pencil working on, 396
Negatives, multiplying, 567
Negatives on ground glass, 26, 28, 113, 121, 145
Negatives, save the, 231, 317
Negatives, selecting and preparing glass, 343
Negatives, the production of proper, for retouching, 519
Negatives, wet and dry, by M. Carey Lea, 474
Neutral, by Wm. Bell, to work and keep a nitrate bath, 440
New atelier, 114
New manipulations, on acquiring, 349
New processes, some, 217
New size for portraits, a, 422, 447
New York Photographic Society, 263
Niepce de St. Victor, M. Adam-Salomon's bust, 362
Niepce de St. Victor, 185, 266
Niepce de St. Victor's process of engraving, 184
Nile pen, 264
Nitrate bath, by Elbert Anderson, pure water, 427, 437, 442
Nitrate bath neutral, by Wm. Bell, 440
Nitrate bath, the alkaline, 50
Nitrate of silver, analysis of, 231
Non-actinic background for dry plates, by M. Carey Lea, 500
OBERNETTER'S photo-collographic process, the, 276, 347
Obituary, 59, 107, 180, 183, 408, 455, 479, 578, 590
Oldham Photographic Society, 59, 105, 323, 371
Oil painted surfaces, cleaning, 5, 87
Opal glass, stains on, 457, 491
Opaque films, sensitiveness of, 122
Operators, specimens of, 506, 513, 527
Organic chloride, by J. Spiller, F.C.S., 453
Origin of photo-collography, 62
Ornamental borders, 155
Oxygen gas at the ordinary temperature, 323
Oxyhydrogen blow-pipe, a new use for the, 323
Oxyhydrogen light, the, 47, 203
Packing at the exhibition, 596, 610
Pantatype, 299
Paper mats for mounting transparencies, 23
Paper, waterproofing, 119
Paraffine lamp enlargements, 202
Paris Photographic Exhibition, the, 303, 314, 435
Parrot in the studio, 419
Past year, photography during the, 1
Paste for mounting photographs, rice, 431
Patent claim, a startling, defeated, 242, 256
Patent law, the, 454
Patent law, the proposed, 464
Patent case decided, important, 148
Patent Office, photo-lithography in the, 323
Patent right in carbon tissue, 193
Patented apparatus, cost of, 309, 314, 334, 347
Patents, British and foreign, 151
Patents in Alsace, French, 483
Pathology, photography and, 323
Pavilion studio, a, 265
Peeling of the film, by H. T. Anthony, 211
Pennsylvania Photographic Association, 479
Pension to a photographer's widow, a, 384
Perils of a photographic editor, 167
Permanence, carbon printing, its progress, economy, and, 110
Permanency in silver prints, 329
Permanent toning bath, by August Thiry, 428
Permanent toning bath, by H. T. Anthony, on a, 305
Permanent sensitive paper, 51, 477
Permanganate of potash, 87, 299
Permeability of caoutchouc tubes, 47
Preservation of eggs, collodion for the, 239
Perspective in portrait photography, by Dr. H. Vogel, on errors of, 76, 89, 139, 305
Petsch, Max, on individuality in portraits, 462
Perils of a photographer during war, 515
Phipson, T. L., Ph.D., the sun, 27
Photo-block printing, by T. J. Deane and H. Billingsby, 393
Photo-clloographic process, Edwards's, 372, 409
Photo-collographic process, Obernetter's, 276, 347

Photo-engraved plates, retouching, 358, 370
Photo-engraving in Australia, 11
Photo-engraving process, a new, 110
Photo-engraving process, by W. Woodbury, 429
Photo-galvanographic Company, 93, 347
Photo-heliography, 453
Photo-lithographic process, alleged new, 577
Photo-lithographic process, a new carbon process and, 243
Photo-lithography, 129, 288, 575
Photo-lithography in Paris, 183
Photo-lithography in the Patent Office, 328
Photograph, strange story of a, 479
Photographer and his model, a, 515
Photographer as he should be and as he is, 444
Photographer charged with wilful damage, a, 95
Photographer, echoes of the month, by an Old, 14, 62, 110, 146, 219, 267, 313, 362, 413, 482, 518
Photographic Æsthetics, 131
Photographic barometer, a, 491
Photographic contributions to vice, 169
Photographic guides to tourists, 395
Photographic horrors, sham, 527
Photographic illustrations in botany, 191
Photographic journal, new, 587
Photographic lectures, 62
Photographic libels, 142
Photographic News, the, 299
Photographic notes on old and new processes, by P. Liesegang, Ph D., 122
Photographic portraitists, enterprise for, 85
Photography and royalty, 551
Photography and surveying on the continent, by Lieut. J. Waterhouse, R.A., 416
Photography as an aid to the artist, by G. Croughton, 498
Photography, rise and progress of, 203
Photography to Phœbus, 252
Photography to the production of maps, by Lieut. J Waterhouse, R.A, application of, 348
Photo-mechanical printing, 2, 579
Photo-mechanical printing, by J. Vincent Robinson, 90
Photo-mechanical process, by W. T. Bovey, Woodbury's, 531
Photo-mechanical patent, Mr. Edwards's, 283
Photo-mechanical printing process, 62, 105, 117, 130, 217, 219
Photo-mechanical printing processes on the continent, by Lieut. J. Waterhouse, 198, 225, 236, 247, 285 389
Photo-mechanical printing process, Rye's process, 385
Photo-micrography, by Lieut-Colonel J. J. Woodward magnesium and electric lights applied to, 320, 330
Photo-printing and heliography, by J. Courteney, on processes of, 135
Photo-relief printing, by Walter Woodbury, 90
Photo-relief Printing Company, in re the, 155
Photographic observation of Venus, the proposed 233
Photographic prizes, 179
Photo-relief process, Woodbury's, 372
Photo-zincographs of national records, 419
Pictorial effect, 431
Pigeon post, photography and the, 570
Pigmented papers for carbon printing, new, 397
Pinholes, 256, 312
Pinholes and spots in the film, 52
Pinholes in negatives, new remedies, 265
Piracies, copyright, 573, 574, 579, 585, 595
Piracies, seizure of, 227
Piracy, alleged, 249
Piracy and copyright, photographic, 506, 526, 549, 560, 562, 616
Piracy, artist's proofs and, 563
Piracy, extensive photographic, 261
Piracy of engravings, photographic, 249
Piracy of photographic reproductions, alleged, 488, 512
Piracy of photographs, 250
Piracy, the late alleged, 491, 541, 562
Pitiful photographs, 347
Placet, process of photo-lithography, 198
Plain paper work, by M. M. Sutliffe, 163
Plaster of Paris working, 216
Plastic material, new, 431
Plate-holders, improvement in, 328
Plates slipping off dippers, 299
Patina upon zinc black, 335
Platinizing glass, 491
Platinizing metals, 203
Platinum for intensifying, 446
Platinum for toning prints, 325
Platinum toning for collodion plates, 26
Plucker, J. F., a modified dry process, 441
Pocket almanack, photographer's, 23
Pollock, the late Sir Frederick, 412
Poison by absorption, 83
Poisoning with bichromate, 119
Poisoning with iodide of potassium, alleged, 11
Popular card portraits, the war, 404
Popular portrait, a, 384
Porcelain glass, Simpsontype, or pictures on, 603
Porcelain glass, S. P. Van Loan, process for albuminized, 79
Portrait photography, by Max Petsch, on the influence of individuality in, 462
Portraits and pictures, by J. Grasshoff, 270
Portraits of drunkards, 107
Portraits of prisoners and wounded, 467
Portraits of the police for thieves, 131
Portraiture and civilization, 527
Portraiture as commerce, 383
Posing and sitting, a chat about, 376
Posing, by J. H. Kent, suggestions on, 404
Postal cards and photography, 479, 482, 564
Postal convention, a recent, 113
Practical hints, 203
Practical man, a, 95
Prayer book of 1636, 611
Preliminary coatings, 41, 431, 489, 524
Preliminary coating, iodized albumen as a, 375
Preservation of dry Taupenot plates, by M. Davanne, notes on, 367
Preserving prints from discolouration during long exposures in the printing frame, by J. Grasshoff, 89
Presentation print, the Albert, 275, 289
Pretsch and photo-galvanography, 142, 146, 164, 267, 274, 278, 297, 310, 314, 322, 334, 491
Prices and degeneracy, low, 309
Prices by combination, maintaining, 239
Printing bath, alum in the, 436
Printing bath from discolouration, 419
Printing by development, 66
Printing made easy and certain, double, 290
Printing process, rapid development, 218
Prints and their production, by S. T. Davenport, 20, 32, 43, 68, 79, 93, 128, 140, 176
Prints, encaustic paste and varnish for, 349
Prints from gelatine, 140
Prisms, liquids of high dispersive power for, by Wolcott Gibbs, 614
Prisoners, photographs of, 97, 146, 338, 585
Pritchard, H. Baden, chez Reutlinger, 30
Pritchard, H. Baden, durable sensitive carbon tissue, 580
Pritchard, H. Baden, on reproduction by the collodio-chloride process, 605
Pritchard, H. Baden, remarks upon carbon processes, 279
Pritchard, H. Baden, the Woodbury and lichtdruck processes compared, by, 398
Pritchard, H. Baden, what is lichtdruck ? 423
Prize prints, 539
Prizes of Royal Cornwall Polytechnic Society, 425
Proctor's new star atlas, 339, 360
Progress of discovery, 336
Progress of mechanical printing, 111
Prosecution of photographers, 493
Protecting negatives from injury, 26
Protuberances of the sun, 497, 519
Pyrogallic acid as poison, 144
Pyrogallic acid and iron for development, 49
Pyrogallic and citric acid intensifier, 52
Pyroxyline, chemical constitution of, 46
Pyroxyline of an equal and unvarying character, on the manufacture of, 64
Pyroxyline, solubility and purification of, 601
Quassia as applied to the production of dry plates, by J. N. Sleddon, 210
Quekett Microscopical Club, 131
Questions and suggestions, by A. de Constant, 41, 65
Rambles amongst provincial studios, 103
Rapid development printing process, 219
Rapid sea views, 418
Raven of 'Barnaby Rudge,' 408
Ray Society, the, 618
Rays, the ultra violet, 431
Reade, the Rev. J. B., obituary of, 590
Reagent, a new paper, 432
Realism and photography, 301
Recent patents, 90, 243, 393, 405, 429, 614
Reception room in America, 332
Red deposit on using golden syrup, 263
Red man, the noble, 334
Reducing intensity of negatives, 104
Reduction of intensity, by M. Carey Lea, 500
Reflectors and backgrounds, by W. Kurtz, notes on, 355, 450
Rome, heliotype in, 564
Registering designs for articles of utility, 2·5
Registration and copyright, 530
Rehn's new photo-lithographic process, 185
Relative intensity of sun and moonlight, 412
Rembrandt portraits, 350, 362, 365
Remedies, pinholes in negatives, new, 265
Remounting coloured prints, 35
Removal of iodide from old nitrate baths, 62
Reproduced negatives, 496
Reproducing negatives, 157, 478, 518, 563
Reproducing negatives from prints, 505
Reproducing works of art, on heliotypy as a means of, 538, 559
Reproductions, alleged piracy of, 438
Reproduction of faded prints by the collodio-chloride process, by H. Baden Pritchard, 605
Reproduction, photographic, 71
Retouching, chemical, 519
Retouching dodge, another negative, 424
Retouching, limit to the use of, 228
Retouching negatives, 69, 114, 135, 155, 175, 238 324, 384, 399
Retouching negatives, silver paint for, 51
Retouching or scraping photo-engraved plates, 359, 370
Retouching solar negatives, 470
Retouching, the production of proper negatives for, 519
Reutlinger, by H. Baden Pritchard, chez, 30
Revolving backgrounds, 503
Risks to photographers in France, 468
Robbery at Mawson and Swan's, 95
Robbery at Mr. Mayall's studio, the, 227
Robbery of photographic material, 369
Robinson and Cherrill, "First Hour of Night," 411
Robinson's golden syrup solution, 21
Robinson, J. V., photo-mechanical printing, 90
Rowsell's graphoscope, 10, 21
Royalty, photography and, 551
Ruskin and Italian photographs, Mr., 83
Rye's light printing process, 387
Salomon pictures, 122, 189
Salomon's bust of Niepce de St. Victor, M., 362
Salomon's new mode of lighting, 469, 565, 579
Salomon's system of lighting an alcove background, 469, 565, 579
Sand's, Commodore, reports of the eclipse, 98
Sarony's photo-crayons, 122
Save the negatives, 231, 317
Save weights, how to, 335
Saving waste, 143
Saxe paper, the war and, 362
Scamoni, G., transfer of negative film, 388
Schnauss, Dr. J., on the iodide of silver, 572
Schnauss, Dr. J., the carbonate of silver, 135
Schwier, K., intensifying negatives, 382, 388
Science and the devil, 144
Science claims of photography, the art and, 55
Science in Paris, 599
Scovill Manufacturing Company, 449
Sea sickness, collodion for, 527
Second-hand apparatus, 335
Secrets in photography, 45, 107
Secrets, photographic, by W. T. Bovey, 423
Sensitiveness of opaque films, 122
Shakespeare proverbs, 166
Sham photographic horrors, 527
Sharpness, want of, in the negative, 519
Shoemakers and photographers, 551
Silver, analysis of nitrate of, 231
Silver bath, method of renovating old, 380
Silver dippers, John M. Blake, on, 320
Silver stains, removing, 240, 396
Silver used to sensitize a quire of paper, 168
Silver v. carbon printing, 153
Silvering glass, 455
Silvering paper, something new on, 211
Silver stains, removing, 566
Simpson, G. Wharton, the Year Book, 27
Simpsontype, or porcelain pictures, 603
Simpsontype or collodio-chloride, 510
Singleton, T., views of Jersey and Guernsey, 340
Sitter, aids to lighting the, 390
Sitter, arranging the, 388
Sitting for a portrait, 323
Size for portraits, a new, 422, 447, 458
Sizes of photographs, 229, 267, 328
Sizes, proposal of a standard system, by Dr. Liesegang, 231
Sleddon, John N., infusion of quassia as applied to the production of dry plates, 210
Smith, C. Piazzi, a poor man's photography at the pyramids, 195
Softness, 279
Solar camera patent, 167
Solar camera printing, by J. Towler, 439
Solar camera enlargements, 481
Solar camera, studio set on fire by a, 52
Solar enlargements, American, 447
Solar microscope in photography, use of the, 21
Solar negative, retouched, 470
Solar operations, photographic records of, 507
Solar printing frame, 587
Solar temperature, 203
Something for studios, 240
Sore hands, 424
South London Society, 35, 94, 131, 190, 215, 238, 287, 503, 548, 597
Specimens of operators, 506, 513, 527
Spectrum analysis, 51
Spill, Daniel, on xylonite, a material applicable to photographic purposes, 608
Spiller, J., a new organic chloride, by, 453
Spiller, John, collodio-chloride process, by, 186
Splitting films, 83
Splitting of negative films, on a means of preventing the, by Dr. H. Vogel, 582

Splitting of varnish films 617
Splitting of varnished films, its cause and prevention, by H Kruger, on the, 604
Stains on opal glass, 467, 491
Stains on prints, 322, 564
Staining sensitive films, by Wm. Blair, 113
Star Atlas, Proctor's new, 339, 360
Starch paste, 212
Statuary in varied positions on one plate, by Wm. White, method of copying, 137
Statuary, photographing, 28
Statue, photographers destroying a, 371
Status of photographers in America, 479
Status of photography, 179
Stealing a photograph, 551
Stealing negatives, charge of, 47, 551
Stella Polaris, gleanings by, 51, 99, 150
Stereographs on transparent, tinted, &c., paper, by Prof J. Towler, M.D , 415
Stillman, R. J., a theory of development, by, 125
Stillman, R. J., the Liverpool dry plates, 78
Stillman's theory of development, 146
Still, by Fred. Dresser, a simple, 557
Still, by J. E. Smith, a way of making a, 536
Stills, 579
Stinde, Dr., the purification of gelatine, 237
Strange story of a photograph, 479
Strengthening negatives, lead pencil for, 82
Studies, photographic, 166
Studios in nature, by Dr. Vogel, 521
Studio and lighting, 213
Studios, rambles amongst provincial, 103
Studios, ridge-roof and sloping front, 310
Suicide, attempted, 252, 300, 443
Suicide by cyanide, 252, 395, 412, 443
Suicide on a wife's grave, 95
Sulphate of copper in iron developer, 82
Sulphides in the operating room, avoid, 419
Sun pictures without a camera, 345
Sun, photographic researches of the, 426
Sun, photographs of the, 419
Sun's limb, protuberances of the, 497, 507, 519
Sun's heat, the, 178
Sunlight and moonlight, relative intensity of, 412
Sunlight effects, photo. by moonlight and, 387
Sunday photography, 155
Sun, photographing the protuberances of the, without an eclipse, 519
Surface finish for photographs, 524, 564
Sutliffe, M. M., plain paper work, 163
Swan, the chemistry of the carbon process, 234, 257
Swan's carbon prints, 128
Syringe applied to photography, 595
Tabensky, Dr. C., on hæmatoxyline, 55
Tannic acid, preparation of, 575
Taupenot plates, by M Davanne, notes on the preservation of dry, 367
Taylor, J. T., Edwards's new combination printing-frame, 593
Telescope for astronomical photography, 215
Temperature of the laboratory, the, 41
Tent, a convenient dark, 244
Tent for outdoor work, a simple, 222
Tent, the umbrella, 328, 366
Terragno, M. Louis, chloride of aluminium as an accelerator in the collodion, 160
Test paper, preparation of ultramarine, 599
Textile fabrics, photographs on, 524
Thomas, F C.S., R. W., is it possible to obtain photographs in colours? 606
Thompson, S , photography and the new art-professorship, 581
Tissue, J. R. Johnson, improvements in, 394
Toning bath, a permanent, by August Thiry, 428
Toning bath, H. T. Anthony, a permanent, 305
Toning bath, citrate of soda in the, 431
Toning bath, the hypo and gold, 294
Toning bath, to recover gold from the, 300
Toning baths, 463
Toning baths, recovery of gold from old, 105
Toning in the fixing bath, 161
Toning prints, platinum for, 26, 325
Touching desks for negatives, improved, 215
Tourists, miniature apparatus for, 324
Towler, Prof J., enamel photographs, 295, 307
Towler, Prof. J . M D., enlargements on collodion films, 474, 485
Towler, Prof. J., printing development, 166
Towler, Prof. J., M.D., practical method of renovating an old silver bath, 380
Towler, Prof. J., M.D., solar printing, 438
Towler, Prof. J., M.D., stereographs on transparent, tinted, &c . paper, 415
Transfer, enlargements on canvas by, 337
Transfer of negative films, by G. Seamoni, 388
Transferred pictures to paper, ivory, wood, matt, 253
Transferring carbon tissue, a method of, 517
Transferring films, 7, 33, 494,
Transferring from one glass to another, 331
Transferring of photographs to various surfaces, by F. W. Grune, 249
Transparencies, collodio-albumen for, 524
Transparencies, glass, by A. Coventry, 607
Transparencies for enlarged negatives, 22
Transparencies, paper matts for mounting, 23
Transparent, tinted, &c., paper, by Prof. J. Towler, M D., stereographs on, 415
Tropman's valuation of his portraits, 47
Tunicare, 110, 119, 130, 239, 383, 394, 407, 408, 418, 434, 539
Tunicare again, 521, 575
Tunicare and preliminary coatings, 434
Tunicare, by S. Fry, albumen coated plates, 548
Tunicare for dry plates, 575, 586
Tunicare for nothing, 586
Tunicare to prevent films splitting, 563
Tyndall on dust, Professor, 38
Tyndall on light, Professor, 465, 475
Two negatives, one print from, 3
Ultra violet ray, the, 431
Use for photographs, a new, 86, 107
Van Loan's, S. P., process for albuminizing porcelain, glass, 79
Varnish, grit, 364
Varnish, collodion as a, 266
Varnish for dishes, 419
Varnish, alcoholic collodion as a, 209
Varnish for prints, a good, 180
Varnish for prints, encaustic paste and, 350
Varnish, protecting negatives by, 26
Varnish, retouching, 489
Varnishing negatives, 215
Varnishing negatives, by Wm. Blair, 341
Varnishing negatives, by Wm. England, on, 32
Varnishes, bleached lac in, 9
Varnishes, matt, 239, 267
Varnishes, report of Berlin commission on, 522
Velocipede for photographic tourists, 297
Vice and photography, 177
Vice, photographic contributions to, 169
Vidal, Leon, on the production of negatives by the carbon process, 312
Vidal, Leon, photographie au charbon, 270
Vignette glass, making, 167
Vignetting, 104
Vignetting portraits, by G. Robert Fitt, 53
Volcanic theories, on, 35
Vogel, Dr , American photography, by, 533
Vogel, Dr. H., in America 364, 609
Vogel, Dr. H., on a means of preventing the splitting of negative films, 582
Vogel, Dr. H., studios in nature, 521
Vogel, Dr., photography and war, by, 536
Vogel, Dr., photography in America, by, 437, 449
Vogel, Dr. H., on errors of perspective in portrait photography, by, 76, 89, 138, 305
Vogel's, Dr., reception in America, 383
War despatches, photography for, 618
Warner, J. Harding, on the difficulties attendant on photography in India, applied to England, and how to overcome them, by, 114, 127
Washed paper, advantages of, 175
Washing gun-cotton in ammonia, 113
Washing sensitized paper, 315
Washing tank, a useful, 209
Washing tank, by J. Carbutt, improved, 64
Washing troughs, double bottom in, 228
Water, London, 47
Waterhouse, Lieut. J., photo-mechanical printing processes on the continent, 198, 225, 236, 247, 285, 3[illegible]9
Water marking paper by photography, 193
Waterproof fabrics, 216
Waterproof, rendering tissues, 132
Waterproofing paper, 119
Weighing and measuring, by M. C. Lea, 260, 403
Weights, how to save, 335
Wenderoth's photo-engraving and direct carbon printing processes, 185
Wet and dry process, by T. Gulliver, the, 18, 44
Wet process, Mr. McLachlan's, 273
What does it mean? 132
White mountains in winter, 185
White, Wm., preparing magnesium and its chlorides, by H. Larkin and, 91
Wilson, Edward L., Mosaics for 1870, 27
Windows in studios and the source of light, 62
Winter photography, or printing by development, by Prof. J. Towler, M.D., 66
Wood blocks, photographing on, 34
Wood engraving, 43
Wood engraving and photography, by Adolph Beyersdorff, 484
Wood engraving, photography for, 254
Woodbury, photo-mechanical printing, 90
Woodburytype, 28, 93, 288
Wooden dippers, 131
Working plaster of Paris, 216
Working with brains, 28
Wrinkles, 35
Year-Book for 1870, 87
Yellow the brightest colour, 203
Wales, by T Gulliver, photographic rambles in South, 280, 304, 316, 379, 399, 412, 461, 472
War and photography, the, 360, 362, 419, 431, 467, 482, 491, 514, 543
Washed and fumed sensitive paper, 314, 358, 362, 467, 433
Washing, method, Ormsbee's new, 372
Washing sensitive paper, 374, 407, 510
Water for printing baths, 347
Water, pure rain, 44, 157, 312
Waterhouse, R.A., Lieut., application of photography to the production of maps, 346
Wet and dry negatives, by M. Carey Lea, manipulations, 474
Woodbury photo-relief process, the, 372
Woodbury process, the, 288
Woodbury's photo-relief patent, 276
Woodward, J. J , Lieut.-Colonel, magnesium and electric lights as applied to photo-micrography, by, 320, 330
Wortley, Colonel Stuart, washed and fumed paper, chloride of gold and potassium, by, 376
Wortley's pictures, Col. Stuart, 339, 359, 370, 383
Wortley's printing and toning baths, Col., 359
Walking stick, a photographic, 515
War and popular card portraits, 404
War, by Dr Vogel, photography and, 536
War fine for photographers, 599
War, perils of photographers during, 515
War victims, photography and the, 598
Warm atmosphere, want of sharpness in the negative as the result of working in a, 519
Washed and fumed albuminized paper, modified method, 407, 433
Washed and fumed paper, 359, 433, 467, 546
Washed paper, acid silver bath a cause of failure with, 454
Washed paper, by Col. Stuart Wortley, printing with fumed and, 340, 376
Water, by Elbert Anderson, pure, and the nitrate bath, 427, 442
Water, impurities of rain, 339
Water, pure, unknown by nature, 408
Waterhouse, Lieut. J., photography and surveying on the Continent, by, 416
Woodbury and lichtdruck processes compared, by H. Baden Pritchard, 399
Woodbury process, 575
Woodbury processes, M. Grasshoff on the Albert and, 602
Woodbury, Walter, improved photo-engraving process, by, 429
Woodbury's photo-mechanical process, by W. T. Bovey, 531
Wortley, Col. Stuart, photographic studies, by, 310, 339, 359, 383
Wortley, Col. Stuart, printing with fumed and washed paper, 340, 359
Xylonite, a material applicable to photographic purposes, by Daniel Spill, on, 608
Yellow spots of prints, dirty whites, 559, 610

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